

Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.



U.S. DEPT. OF AGRICULTURE
NATIONAL AGRICULTURAL LIBRARY

APR 11 1969

CURRENT SERIAL RECORDS

WATER SUPPLY OUTLOOK FOR WASHINGTON

and
FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS

UNITED STATES DEPARTMENT of AGRICULTURE--SOIL CONSERVATION SERVICE.

and
DEPARTMENT of WATER RESOURCES STATE of WASHINGTON

Data included in this report were obtained by the agencies named above in cooperation with the U.S. Forest Service, U.S. Geological Survey, National Park Service, and other Federal, State and Private organizations.

AS OF
APR. 1, 1969

TO RECIPIENTS OF WATER SUPPLY OUTLOOK REPORTS:

Most of the usable water in western states originates as mountain snowfall. This snowfall accumulates during the winter and spring, several months before the snow melts and appears as streamflow. Since the runoff from precipitation as snow is delayed, estimates of snowmelt runoff can be made well in advance of its occurrence. Streamflow forecasts published in this report are based principally on measurement of the water equivalent of the mountain snowpack.

Forecasts become more accurate as more of the data affecting runoff are measured. All forecasts assume that climatic factors during the remainder of the snow accumulation and melt season will interact with a resultant average effect on runoff. Early season forecasts are therefore subject to a greater change than those made on later dates.

The snow course measurement is obtained by sampling snow depth and water equivalent at surveyed and marked locations in mountain areas. A total of about ten samples are taken at each location. The average of these are reported as snow depth and water equivalent. These measurements are repeated in the same location near the same dates each year.

Snow surveys are made monthly or semi-monthly from January 1 through June 1 in most states. There are about 1400 snow courses in Western United States and in the Columbia Basin in British Columbia. In the near future, it is anticipated that automatic snow water equivalent sensing devices along with radio telemetry will provide a continuous record of snow water equivalent at key locations.

Detailed data on snow course and soil moisture measurements are presented in state and local reports. Other data on reservoir storage, summaries of precipitation, current streamflow, and soil moisture conditions at valley elevations are also included. The report for Western United States presents a broad picture of water supply outlook conditions, including selected streamflow forecasts, summary of snow accumulation to date, and storage in larger reservoirs.

Snow survey and soil moisture data for the period of record are published by the Soil Conservation Service by states about every five years. Data for the current year is summarized in a West-wide basic data summary and published about October 1 of each year.

PUBLISHED BY SOIL CONSERVATION SERVICE

The Soil Conservation Service publishes reports following the principal snow survey dates from January 1 through June 1 in cooperation with state water administrators, agricultural experiment stations and others. Copies of the reports for Western United States and all state reports may be obtained from Soil Conservation Service, Western Regional Technical Service Center, Room 209, 701 N. W. Glisan, Portland, Oregon 97209.

Copies of state and local reports may also be obtained from state offices of the Soil Conservation Service in the following states:

STATE	ADDRESS
Alaska	P. O. Box "F", Palmer, Alaska 99645
Arizona	6029 Federal Building, Phoenix, Arizona 85205
Colorado (N. Mex.)	12417 Federal Building, Denver, Colorado 80521
Idaho	P. O. Box 38, Boise, Idaho 83707
Montana	P. O. Box 98, Bozeman, Montana 59715
Nevada	P. O. Box 4850, Reno Nevada 89505
Oregon	1218 S. W. Washington St., Portland, Oregon 97205
Utah	4012 Federal Building, Salt Lake City, Utah 84111
Washington	360 U.S. Court House, Spokane, Washington 99201
Wyoming	P. O. Box 340, Casper, Wyoming 82602

PUBLISHED BY OTHER AGENCIES

Water Supply Outlook reports prepared by other agencies include a report for California by the Water Supply Forecast and Snow Surveys Unit, California Department of Water Resources, P. O. Box 388, Sacramento, California 95802 --- and for British Columbia by the Department of Lands, Forests and Water Resources, Water Resources Service, Parliament Building, Victoria, British Columbia



WATER SUPPLY OUTLOOK FOR WASHINGTON

and
FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS

Issued by

KENNETH E. GRANT
ADMINISTRATOR
SOIL CONSERVATION SERVICE
WASHINGTON, D.C.

|||||

Released by

ORLO W. KRAUTER
STATE CONSERVATIONIST
SOIL CONSERVATION SERVICE
SPOKANE, WASHINGTON

In Cooperation with

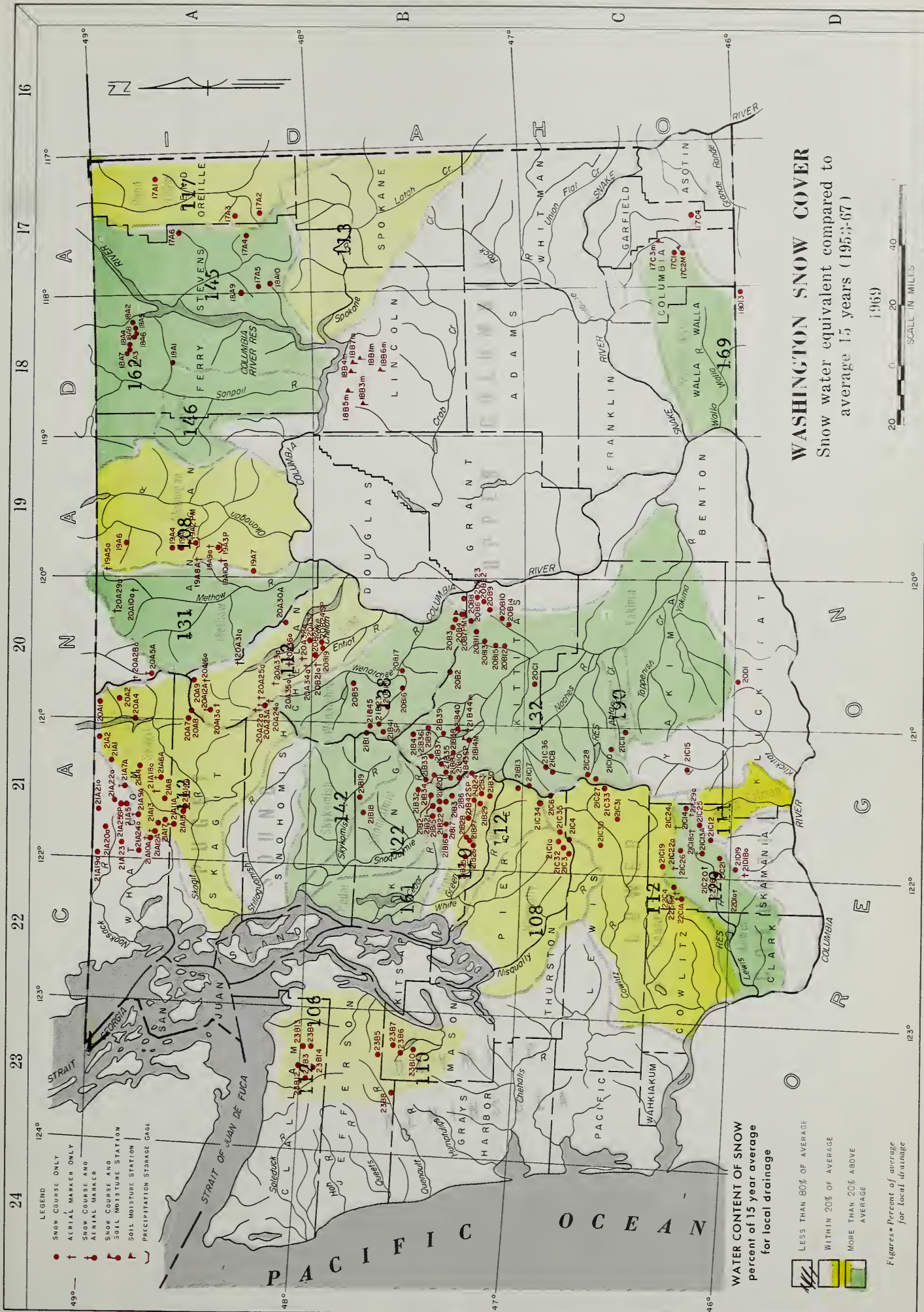
H. MAURICE AHLQUIST
DIRECTOR
DEPARTMENT OF WATER RESOURCES
STATE OF WASHINGTON

|||||

Report prepared by

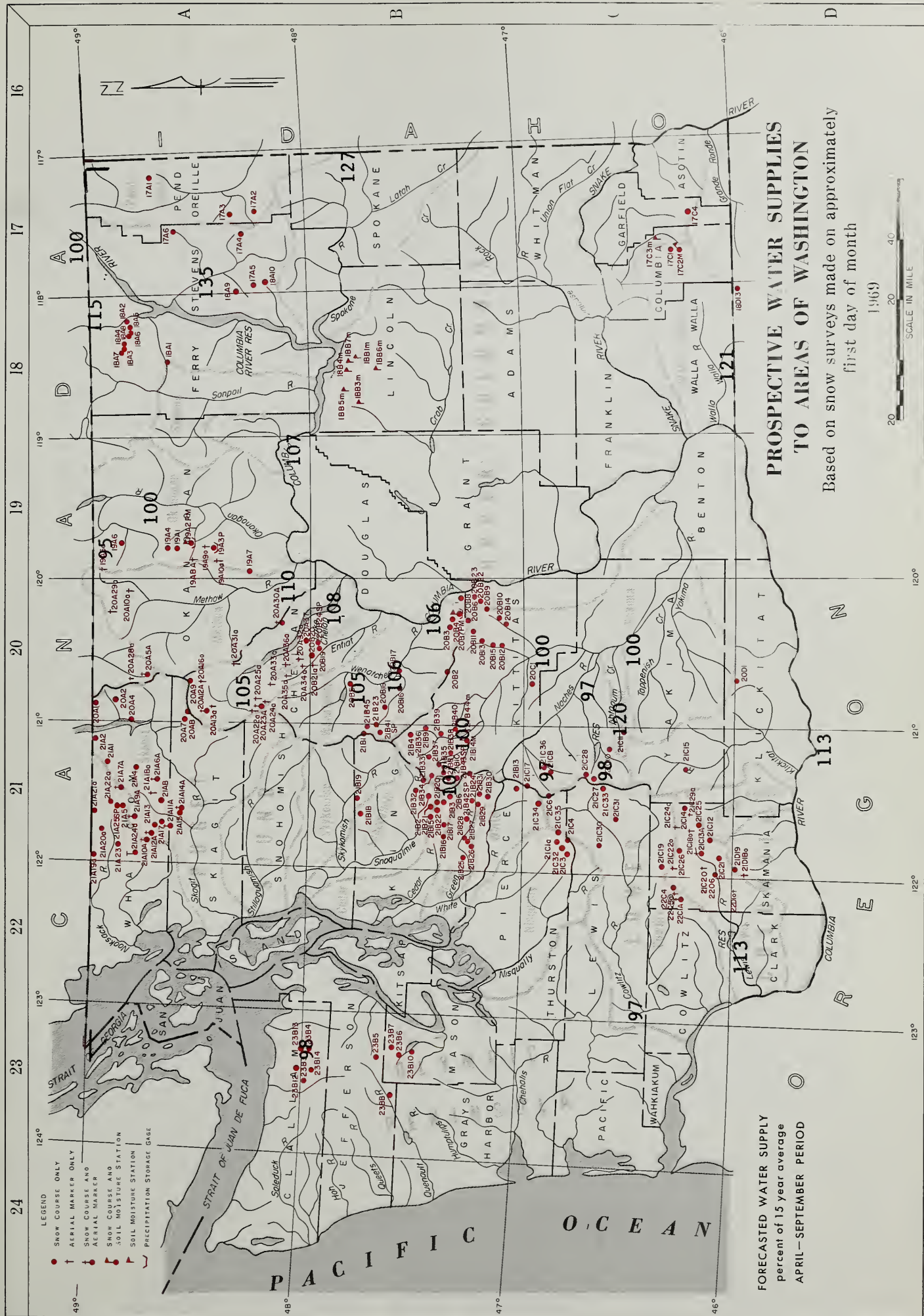
ROBERT T. DAVIS, Snow Survey Supervisor

SOIL CONSERVATION SERVICE
360 U.S. COURTHOUSE
SPOKANE, WASHINGTON 99201



INDEX to WASHINGTON SNOW COURSES, SOIL MOISTURE STATIONS and PRECIPITATION STORAGE GAGES

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
UPPER COLUMBIA DRAINAGE					
Pend Oreille River					
Boyer Mountain	17A2	7	31N	43E	5250
Bunchgrass Meadow	17A1	24	37N	44E	5000
Winchester Creek	17A3	30	33N	43E	2970
Kettle River					
Boulder Road	18A2	36	39N	36E	1450
Butte Creek	18A3	28	39N	35E	4070
Cabin Creek	18A8	5	33N	36E	3170
Cat Creek	18A4	26	39N	35E	3595
Snow Caps Creek	18A5	3	38N	36E	2150
Snow Caps Trail	18A6	5	38N	36E	2720
Summit G. S.	18A7	20	39N	35E	4600
Calville River					
Baird	17A6	19	36N	42E	3215
Carlson	18A9	34	32N	38E	2885
Chevelah	17A4	11	32N	41E	4925
Stranger Mountain	17A5	26	31N	38E	4990
Togo	18A10	6	29N	38E	3370
Sanpoil River					
Sherman Creek Pass	18A1	10	36N	35E	5350
Okanogan River					
Clark	19A8a	2	36N	23E	7000
Muckamuck	19A9a	20	36N	24E	6750
Mutton Creek No. 1	19A1	10	37N	24E	5700
Mutton Creek No. 2	19A4	10	37N	24E	6000
Paysayen	20A28a	32	40N	18E	4300
Rusty Creek	19A3P	18	35N	24E	4000
Salmon Meadows	19A2FM	33	37N	24E	4500
Starvation Mtn.	19A10a	15	35N	23E	6750
Touts Coulee	19A6	30	39N	25E	2845
Methow River					
Billy Goat Pass	20A10a	10	38N	20E	6400
Dollar Watch	20A29a	8	39N	20E	7000
Harts Pass	20A5A	7	37N	18E	6500
Horseshoe Basin	19A5a	15	40N	23E	7000
Loup Loop	19A7	36	34N	23E	4650
Chilton Lake Basin					
Cloudy Pass	20A22a	12	31N	15E	6500
Greenwood Flat	20A25a	3	31N	16E	3540
Little Meadows	20A24a	8	31N	16E	5275
Lyman Lake	20A23a	18	31N	16E	5900
Park Creek Flat	20A13a	18	34N	16E	2220
Park Creek Ridge	20A12a	7	34N	16E	4600
Petersons	20A16a	3	34N	17E	3730
Rainy Pass	20A9	21	35N	17E	4780
Safety Harbor	20A30a	32	31N	20E	6300
War Creek Pass	20A31a	34	33N	18E	6500
Entiat River					
Brief	20B19	34	28N	19E	1600
Entiat Meadows	20A33a	28	31N	17E	4800
Entiat River Trail	20A34a	2	29N	17E	3150
Fox Camp	20A36a	17	30N	18E	6510
Pope Ridge	20B20	22	29N	18E	4300
Pope Ridge Snow Pillow	20B24SP	22	29N	18E	4300
Pugh Ridge	20A32a	34	30N	18E	6400
Shady Pass	20A37	20	29N	19E	6200
Snow Brushy	20A35a	21	30N	17E	3850
Tommy Creek	20B21a	10	28N	18E	5300
Wenatchee River					
Berne-Mill Creek	21B23	7	26N	15E	2925
Berne-Mill Creek (New)	21B14SP	13	26N	14E	3240
Chivavum G. S.	20B2	35	22N	17E	4270
Lake Wenatchee	20B16	4	25N	17E	1810
Lake Wenatchee	20B5	33	27N	17E	1970
Lavenworth R. S.	20B17	1	24N	17E	1127
Merritt	20B18	4	26N	16E	2140
Stevens Pass	21B1	14	26N	13E	4070
Stevens Pass Sand Shed	21B45	12	26N	19E	3700
LOWER COLUMBIA DRAINAGE					
Asotin Creek					
Spruce Springs	17C4	9	8N	42E	5700
Mill Creek					
Couse	17C3m	2	9N	35E	3370
Homestead	17C1	11	9N	40E	4030
Martin Springs (Helmets SM)	17C2M	23	9N	40E	4400
Walla Walla Diversion	18D13	22	6N	38E	2400
Klickitat River					
Satus Pass	20D1	21	6N	17E	4030
West Fork Cabin	21C15	23	9N	12E	3000
White Salmon River					
Cultus Creek	21C12	35	7N	8E	4000
Lewis River					
Blue Lake	21C22a	19	N	8E	4800
Bob's Trail	21C21	25	N	7E	2200
Calamity Ridge	22D1a	6	N	5E	2500
Council Passes	21C18a	24	9N	9E	4200
Pend Oreille River					
Boyer Mountain	17A2	7	31N	43E	5250
Bunchgrass Meadow	17A1	24	37N	44E	5000
Winchester Creek	17A3	30	33N	43E	2970
Kettle River					
Boulder Road	18A2	36	39N	36E	1450
Butte Creek	18A3	28	39N	35E	4070
Cabin Creek	18A8	5	33N	36E	3170
Cat Creek	18A4	26	39N	35E	3595
Snow Caps Creek	18A5	3	38N	36E	2150
Snow Caps Trail	18A6	5	38N	36E	2720
Summit G. S.	18A7	20	39N	35E	4600
Calville River					
Baird	17A6	19	36N	42E	3215
Carlson	18A9	34	32N	38E	2885
Chevelah	17A4	11	32N	41E	4925
Stranger Mountain	17A5	26	31N	38E	4990
Togo	18A10	6	29N	38E	3370
Sanpoil River					
Sherman Creek Pass	18A1	10	36N	35E	5350
Okanogan River					
Clark	19A8a	2	36N	23E	7000
Muckamuck	19A9a	20	36N	24E	6750
Mutton Creek No. 1	19A1	10	37N	24E	5700
Mutton Creek No. 2	19A4	10	37N	24E	6000
Paysayen	20A28a	32	40N	18E	4300
Rusty Creek	19A3P	18	35N	24E	4000
Salmon Meadows	19A2FM	33	37N	24E	4500
Starvation Mtn.	19A10a	15	35N	23E	6750
Touts Coulee	19A6	30	39N	25E	2845
Methow River					
Billy Goat Pass	20A10a	10	38N	20E	6400
Dollar Watch	20A29a	8	39N	20E	7000
Harts Pass	20A5A	7	37N	18E	6500
Horseshoe Basin	19A5a	15	40N	23E	7000
Loup Loop	19A7	36	34N	23E	4650
Chilton Lake Basin					
Cloudy Pass	20A22a	12	31N	15E	6500
Greenwood Flat	20A25a	3	31N	16E	3540
Little Meadows	20A24a	8	31N	16E	5275
Lyman Lake	20A23a	18	31N	16E	5900
Park Creek Flat	20A13a	18	34N	16E	2220
Park Creek Ridge	20A12a	7	34N	16E	4600
Petersons	20A16a	3	34N	17E	3730
Rainy Pass	20A9	21	35N	17E	4780
Safety Harbor	20A30a	32	31N	20E	6300
War Creek Pass	20A31a	34	33N	18E	6500
Entiat River					
Brief	20B19	34	28N	19E	1600
Entiat Meadows	20A33a	28	31N	17E	4800
Entiat River Trail	20A34a	2	29N	17E	3150
Fox Camp	20A36a	17	30N	18E	6510
Pope Ridge	20B20	22	29N	18E	4300
Pope Ridge Snow Pillow	20B24SP	22	29N	18E	4300
Pugh Ridge	20A32a	34	30N	18E	6400
Shady Pass	20A37	20	29N	19E	6200
Snow Brushy	20A35a	21	30N	17E	3850
Tommy Creek	20B21a	10	28N	18E	5300
Wenatchee River					
Berne-Mill Creek	21B23	7	26N	15E	2925
Berne-Mill Creek (New)	21B14SP	13	26N	14E	3240
Chivavum G. S.	20B2	35	22N	17E	4270
Lake Wenatchee	20B16	4	25N	17E	1810
Lake Wenatchee	20B5	33	27N	17E	1970
Lavenworth R. S.	20B17	1	24N	17E	1127
Merritt	20B18	4	26N	16E	2140
Stevens Pass	21B1	14	26N	13E	4070
Stevens Pass Sand Shed	21B45	12	26N	19E	3700
UPPER COLUMBIA DRAINAGE					
Pend Oreille River					
Boyer Mountain	17A2	7	31N	43E	5250
Bunchgrass Meadow	17A1	24	37N	44E	5000
Winchester Creek	17A3	30	33N	43E	2970
Kettle River					
Boulder Road	18A2	36	39N	36E	1450
Butte Creek	18A3	28	39N	35E	4070
Cabin Creek	18A8	5	33N	36E	3170
Cat Creek	18A4	26	39N	35E	3595
Snow Caps Creek	18A5	3	38N	36E	2150
Snow Caps Trail	18A6	5	38N	36E	2720
Summit G. S.	18A7	20	39N	35E	4600
Calville River					
Baird	17A6	19	36N	42E	3215
Carlson	18A9	34	32N	38E	2885
Chevelah	17A4	11	32N	41E	4925
Stranger Mountain	17A5	26	31N	38E	4990
Togo	18A10	6	29N	38E	3370
Sanpoil River					
Sherman Creek Pass	18A1	10	36N	35E	5350
Okanogan River					
Clark	19A8a	2	36N	23E	7000
Muckamuck	19A9a	20	36N	24E	6750
Mutton Creek No. 1	19A1	10	37N	24E	5700
Mutton Creek No. 2	19A4	10	37N	24E	6000
Paysayen	20A28a	32	40N	18E	4300
Rusty Creek	19A3P	18	35N	24E	4000
Salmon Meadows	19A2FM	33	37N	24E	4500
Starvation Mtn.	19A10a	15	35N	23E	6750
Touts Coulee	19A6	30	39N	25E	2845
Methow River					
Billy Goat Pass	20A10a	10	38N	20E	6400
Dollar Watch	20A29a	8	39N	20E	7000
Harts Pass	20A5A	7	37N	18E	6500
Horseshoe Basin	19A5a	15	40N	23E	7000
Loup Loop	19A7	36	34N	23E	4650
Chilton Lake Basin					
Cloudy Pass	20A22a	12	31N	15E	6500
Greenwood Flat	20A25a	3	31N	16E	3540
Little Meadows	20A24a	8	31N	16E	5275
Lyman Lake	20A23a	18	31N	16E	5900
Park Creek Flat	20A13a	18	34N	16E	2220
Park Creek Ridge	20A12a	7	34N	16E	4600
Petersons	20A16a	3	34N	17E	3730
Rainy Pass	20A9	21	35N	17E	4780
Safety Harbor	20A30a	32	31N	20E	6300
War Creek Pass	20A31a	34	33N	18E	6500
Entiat River					
Brief	20B19	34	28N	19E	1600
Entiat Meadows	20A33a	28	31N	17E	4800
Entiat River Trail	20A34a	2	29N	17E	3150
Fox Camp	20A36a	17	30N	18E	6510
Pope Ridge	20B20	22	29N	18E	4300
Pope Ridge Snow Pillow	20B24SP	22	29N	18E	4300
Pugh Ridge	20A32a	34	30N	18E	6400
Shady Pass	20A37	20	29N	19E	6200
Snow Brushy	20A35a	21	30N	17E	3850
Tommy Creek	20B21a	10	28N	18E	5300
Wenatchee River					
Berne-Mill Creek	21B23	7	26N	15E	2925
Berne-Mill Creek (New)	21B14SP	13	26N	14E	3240
Chivavum G. S.	20B2	35	22N	17E	4270
Lake Wenatchee	20B16	4	25N	17E	1810
Lake Wenatchee	20B5	33	27N	17E	1970
Lavenworth R. S.	20B17	1	24N	17E	1127
Merritt	20B18	4	26N	16E	2140
Stevens Pass	21B1	14	26N	13E	4070
Stevens Pass Sand Shed	21B45	12	26N	19E	3700
LOWER COLUMBIA DRAINAGE					
Asotin Creek					
Spruce Springs	17C4	9	8N	42E	5700
Mill Creek					
Couse	17C3m	2	9N	35E	3370
Homestead	17C1	11	9N	40E	4030
Martin Springs (Helmets SM)	17C2M	23	9N	40E	4400
Walla Walla Diversion	18D13	22	6N	38E	2400
Klickitat River					
Satus Pass	20D1	21	6N	17E	4030
West Fork Cabin	21C15	23	9N	12E	3000
White Salmon River					
Cultus Creek	21C12	35	7N	8E	4000
Lewis River					
Blue Lake	21C22a	19	N	8E	4800
Bob's Trail	21C21	25	N	7E	2200
Calamity Ridge	22D1a	6	N	5E	2500
Council Passes	21C18a	24	9N	9E	4200
Pend Oreille River					
Boyer Mountain	17A2	7	31N	43E	5250
Bunchgrass Meadow	17A1	24	37N	44E	5000
Winchester Creek	17A3	30	33N	43E	2970
Kettle River					
Boulder Road	18A2	36	39N	36E	1450
Butte Creek	18A3	28	39N	35E	4070
Cabin Creek	18A8	5	33N	36E	3170
Cat Creek	18A4	26	39N	35E	3595
Snow Caps Creek	18A5	3	38N	36E	2150
Snow Caps Trail	18A6	5	38N	36E	2720
Summit G. S.	18A7	20	39N	35E	4600
Calville River					
Baird	17A6	19	36N	42E	3215
Carlson	18A9	34	32N	38E	2885
Chevelah	17A4	11	32N	41E	4925
Stranger Mountain	17A5	26	31N	38E	4990
Togo	18A10	6	29N	38E	3370
Sanpoil River					
Sherman Creek Pass	18A1	10	36N	35E	5350
Okanogan River					



INDEX to WASHINGTON SNOW COURSES, SOIL MOISTURE STATIONS AND PRECIPITATION STORAGE GAGES

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
UPPER COLUMBIA DRAINAGE					
Pend Oreille River					
Boyer Mountain	1742	7	31N	43E	5250
Bunchgrass Meadow	1741	24	37N	44E	5000
Winchester Creek	1743	30	33N	43E	2970
Kettle River					
Boulder Road	1842	36	39N	36E	1450
Butte Creek	1843	28	39N	35E	4070
Cabin Creek	1848	5	38N	36E	3170
Goat Creek	1847	26	39N	35E	3595
Snow Caps Creek	1845	3	38N	36E	2150
Snow Caps Trail	1846	5	38N	36E	2720
Summit G. S.	1847	20	39N	35E	4600
Colville River					
Beard	1746	19	36N	42E	3215
Carlson	1849	34	32N	38E	2885
Chawish	1744	11	32N	41E	4925
Stranger Mountain	1745	26	31N	38E	4990
Togo	1840	6	29N	35E	3370
Sanpoil River					
Sherman Creek Pass	1841	10	36N	35E	5350
Okanogan River					
Clark	1948a	2	36N	23E	7000
Muckamuck	1949a	20	36N	24E	6750
Nutton Creek No. 1	1941	30	37N	24E	5700
Nutton Creek No. 2	1941	19	37N	24E	6000
Paysayten	20428a	32	40N	18E	4300
Rusty Creek	1943P	38	35N	24E	4000
Salmon Meadows	1942PM	33	37N	22E	4500
Starvation Mtn.	1940a	15	35N	23E	6750
Touts Coulee	1946	30	39N	25E	2845
Methow River					
Billy Goat Pass	2040a	10	38N	20E	6400
Dollar Watch	20429a	8	39N	20E	7000
Harts Pass	2045A	7	37N	18E	6500
Horseshoe Basin	1945a	15	40N	23E	7000
Loup Loup	1947	36	34N	23E	4650
Chelan Lake Basin					
Cloudy Pass	20422a	12	31N	15E	6500
Greenwood Flat	20425a	3	31N	16E	3540
Little Meadows	20424a	8	31N	16E	5275
Lyman Lake Flat	20423a	18	31N	16E	5900
Park Creek Flat	20413a	18	34N	16E	2220
Park Creek Ridge	20412a	3	34N	16E	4600
Petersons	20416a	3	34N	17E	3730
Rainy Pass	2049	21	33N	17E	4780
Safety Harbor	20430a	32	31N	20E	6300
War Creek Pass	20431a	34	33N	18E	6500
Entiat River					
Brief	20819	34	28N	10E	1600
Entiat Meadows	20433a	28	31N	17E	4800
Entiat River Trail	20434a	2	29N	17E	3150
Fox Camp	20436a	17	30N	18E	6510
Pope Ridge	20820	22	29N	18E	4300
Pope Ridge Snow Pillow	20824SP	22	29N	18E	4300
Pugh Ridge	20432a	34	30N	18E	6400
Shady Pass	20437	20	29N	19E	6200
Snow Brushy	20435a	21	30N	17E	3850
Tommy Creek	20821a	10	28N	18E	5300
Wenatchee River					
Berne-Mill Creek	21823	7	26N	15E	2925
Berne-Mill Creek (New)	21841SP	13	26N	14E	3240
Blevett Pass No. 2	2082	35	22N	17E	4270
Chivaukum G. S.	20816	4	25N	17E	1810
Lake Wenatchee	2085	33	27N	17E	1970
Leavenworth R. S.	20817	1	24N	17E	1127
Merritt	20818	4	26N	16E	2140
Stevens Pass	2181	12	26N	13E	4070
Stevens Pass Sand Shed	21845	12	26N	13E	3700
LOWER COLUMBIA DRAINAGE					
Asotin Creek					
Spruce Springs	1704	9	8N	42E	5700
Mill Creek					
Couse	1703m	2	9N	35E	3370
Homestead	1701	11	9N	40E	4030
Martin Springs (Helmers SW)	1702M	23	9N	40E	4100
Walla Walla Diversion	18013	22	6N	38E	2100
Klickitat River					
Satus Pass	2001	21	6N	17E	4030
West Fork Cabin	21015	23	9N	12E	3000
White Salmon River					
Cultus Creek	21012	35	7N	8E	4000
Lewis River					
Blue Lake	21022a	19	9N	8E	4800
Bob's Trail	21021	25	8N	7E	2200
Calamity Ridge	2201a	5	5N	5E	2500
Council Pass	21018a	24	9N	9E	4200
Skagit River					
Beaver Creek Trail	21A4	35	37N	12E	2200
Beaver Pass	21A1	9	37N	12E	3420
Devils Park	20A4	34	36N	14E	5900
Freezeout Creek Trail	20A1	14	40N	14E	3500
Freezeout Meadows	21A2	4	40N	14E	5000
Lake Hazomeen	21A2	19	40N	14E	2600
Meadows Cabins	20A8	29	36N	14E	1900
Thunder Basin	20A7	15	35N	14E	4200
Baker River					
Dock Butte	21A11a	8	36N	8E	3900
Easper Pass	21A7a	19	39N	11E	5200
Jasper Pass	21A6a	17	37N	11E	5400
Kono Kulahn	21A7	31	37N	9E	400
Marten Lake	21A7a	23	37N	8E	3600
Mount Blum	21A12a	27	37N	10E	5800
Mokey Creek	21A13a	20	37N	10E	2100
Schreibers Meadow	21A10a	18	37N	8E	3400
S. F. Thunder Creek	21A14a	20	36N	9E	2600
Sulphur Creek	21A13	22	37N	3E	1600
Three Mile Creek	21A15	18	36N	7E	1600
Watson Lakes	21A6	25	37N	9E	4500
Nooksack River					
Bald Mountain	21A19a	7	40N	7E	4400
Canyon	21A20a	20	40N	8E	5100
Glacier Creek	21A23	10	38N	7E	3700
Hammer Pass	21A22a	8	39N	9E	5000
Mazama Park	21A24a	2	37N	7E	4500
Panorama	21A5	17	39N	9E	4300
Panorama Snow Pillow	21A25SP	17	39N	9E	4300
Twin Lakes	21A21a	16	40N	9E	5200
OLYMPIC PENINSULA					
Dungeness River					
Deer Park	23B4	1	28N	5W	5200
Morse Creek					
Cox Valley	23B14	29	20N	6W	4850
Deer Park G. S.	23B13	1	28N	5W	4850
Morse Creek	23B12	25	29N	7W	5425
Elwha River					
Hurricane	23B3	36	29N	7W	4500
Skokomish River					
Black and White	23B7	17	24N	5W	4200
Black and White Lakes	23B6	16	24N	5W	4700
Four Stream	23B10	1	23N	6W	3000
Horne Sweet Home	23B5	22	25N	5W	5200
Sundown Pass	23B8	25	24N	7W	3900
LEGEND					
NUMBERING SYSTEM EXAMPLE					
21A7	SNOW COURSE ONLY				
21A7A	AERIAL MARKER ONLY				
21A7A	SNOW COURSE AND AERIAL MARKER				
21A7M	SNOW COURSE AND SOIL MOISTURE STATION				
21A7M	SOIL MOISTURE STATION				
21A7P	SNOW COURSE AND PRECIPITATION STORAGE GAGE				
21A7P	PRECIPITATION STORAGE GAGE				
21A7SP	SNOW PILLOW				

WATER SUPPLY OUTLOOK

State of Washington

April 1, 1969

* There has been a general deterioration in the water supply outlook *
* over the State of Washington and its tributary streams during the *
* month of March. Very little precipitation has occurred either in the *
* form of rain at valley stations or as snow at higher portions of *
* the watersheds. Warm days and cool nights have compacted or rip- *
* ened the snow but very little runoff has occurred even at the low- *
* er elevations. The snowpack now has a density, ratio of water *
* content to snow depth, that is much higher than normal for this *
* time of year. The snow cover now varies from a high of 90% great- *
* er than average to a low of 6% greater. The snow cover at the *
* lower elevations still accounts for this above-normal percentage. *
* Although there has been some melting at the lower elevations and *
* much of the Columbia Basin is now free of snow, all of the low el- *
* evation snow courses indicate a much higher percentage of snow *
* cover than normal for this time of year. In the tributary basins *
* in British Columbia the situation is near normal as was reported *
* last month. The snowpack in the southern areas still is much bet- *
* ter, percentagewise, than that in the northern areas. Soil mois- *
* ture conditions remain about the same as was reported last month as *
* a result of the lack of precipitation and melting in the mountains. *
* Irrigation reservoirs generally have normal amounts of water in *
* storage while the power reservoirs still have considerably less *
* than normal amounts as of the first of April. Runoff forecasts *
* have all been reduced from those reported last month; some as much *
* as 15% but adequate water supplies will be experienced throughout *
* the entire State. Runoff during the month of March was near nor- *
* mal with the exception of the Palouse River which had a high of *
* 265% of normal. *

SNOW COVER

While last month all of the areas in Washington reported more than 20% above normal snow cover, this month much of that snow cover is down to within the 100 to 120% range. This is a result of lack of precipitation during the month and in some melting in the mountains. The situation on the Puget Sound drainage continues to be the same as last month. The Cedar River which had 1127% of last year now has a percentage figure that is 2889% of last year. In most other years when there has been a good snowpack in this drainage, which was generally at lower elevations, the snowpack has melted and run off by April 1. This has not occurred this year.

RESERVOIRS

Due to the lack of high flows in March, power reservoirs still have considerably below normal amounts of water in storage. Irrigation reservoirs which have just started to be used for their purposes have normal amounts as of April 1. Franklin D. Roosevelt Lake has been drawn down to the lowest point in its history. This draw down is for the construction of the third power house now underway. The flow of the Columbia will fill this reservoir in the spring. All reservoirs are expected to fill this runoff season.

PRECIPITATION

During the month of March the precipitation ranged from 69% below normal for northeastern Washington up to a high of 32% below normal on the northwestern slopes of the Cascades. The winter season, from November through March, shows that there is a deficit of precipitation in the Columbia portion of British Columbia on the north and southwest slopes of the Cascades. The whole of the central portion of the State has a surplus or above normal accumulation throughout this winter season.

STREAMFLOW

Runoff during the month of March was generally near normal with the low occurring on the Methow and the high, as stated above, on the Palouse. All runoff was within the 40% (plus or minus) normal area during the month. Forecasts of streamflows as reported before have been reduced. The expectations now are for normal to 10% above on the Columbia at the Dalles; 13% to 35% above normal flows in the northeastern portion of the State; 5% below to 10% above in the northcentral area; 3% below to 7% above in the Yakima basin, with the exception of the Ahtanum Creeks which are expected to have a flow that is 20% above normal. Along the southern boundary, Mill Creek is expected to flow 21% greater than normal while the Lewis and Cowlitz are expected to flow 13% above normal and 3% below normal, respectively. Flows in the Olympic Peninsula are expected to be 2% below normal. All of these figures are for the April-September runoff season with respect to the 1953-67, 15-year base period.

STREAMFLOW FORECASTS - APRIL 1969

The following summarized runoff forecasts are based principally on mountain snow cover and on the assumption that precipitation and temperature will be near average from the present time to the end of the forecast period. Appreciable deviations from normal of temperature and/or precipitation will correspondingly modify these forecasts.

Streamflow figures for 1968 are preliminary and subject to revision.

Basin, Stream and Station	Forecast Runoff 1969	Seasonal Streamflow in Thousands of Acre-Feet					
		%	Fore-	Measured Runoff			15-Yr.
		15-Yr. Avg.	cast Period	1968	1967	1966	Avg. 1953-67
<u>COLUMBIA BASIN</u>							
<u>Columbia River System</u>							
Columbia River							
at Birchbank <u>1/</u>	46500	100	Apr-Sep	46362	51491	45563	46370
	37800	101	Apr-Jul	35034	40874	35808	37485
	27300	101	Apr-Jun	22603	27224	24823	27045
Columbia River							
at Grand Coulee <u>1/</u>	74400	107	Apr-Sep	62649	73451	62404	69452
	63800	108	Apr-Jul	49534	61876	51602	58895
	49600	108	Apr-Jun	35427	45656	38739	45885
Columbia River							
at The Dalles, Ore. <u>1/</u>	116000	110	Apr-Sep	88503	108237	86923	105176
	99500	110	Apr-Jul	70902	92498	72261	90049
	81500	113	Apr-Jun	53387	70762	56465	72406
Columbia River							
bl Rock Island Dam <u>1/</u>	80500	106	Apr-Sep	69046	80788	67973	76244
	69300	107	Apr-Jul	55130	68577	56575	64779
	53500	106	Apr-Jun	39602	51114	42757	50390
<u>Pend Oreille River System</u>							
Pend Oreille River							
bl. Box Canyon	18100	113	Apr-Sep	12895	16492	13761	15990
	16700	113	Apr-Jul	11020	15587	12783	14770
	14500	114	Apr-Jun	9391	13362	11059	12746
<u>Kettle River System</u>							
Kettle River							
nr. Laurier	2200	115	Apr-Sep	1856	1923	1380	1918
	2100	115	Apr-Jul	1721	1891	1326	1821
	1930	117	Apr-Jun	1560	1750	1172	1644

1/ Observed flow corrected for storage in any of the following reservoirs which are above the station: Kootenay Lake, Hungry Horse, Flathead Lake, Pend Oreille Lake, F. D. Roosevelt Lake, Lake Chelan, Coeur d'Alene Lake, Brownlee, Noxon Reservoir and pumpage at F. D. Roosevelt Lake.

Streamflow Forecasts - April 1969 (Cont.)

Basin, Stream and Station	Forecast Runoff 1969	Seasonal Streamflow in Thousands of Acre-Feet				
		% 15-Yr. Avg.	Fore- cast Period	Measured Runoff		
				1968	1967	15-Yr. Avg. 1953-67
<u>Kettle River System (Cont.)</u>						
Colville River						
at Kettle Falls	206	135	Apr-Sep	129	80	153
	193	137	Apr-Jul	123	73	141
	180	137	Apr-Jun	116	67	131
<u>Spokane River System*</u>						
Spokane River						
at Post Falls, Ida. <u>2/</u>	4000	127	Apr-Sep	1775	2811	2513
	3880	127	Apr-Jul		2752	2456
	3720	128	Apr-Jun		2618	2365
						3151
						3055
						2913
<u>Okanogan River System**</u>						
Similkameen River						
nr. Nighthawk	1450	95	Apr-Sep	1377	1678	975
	1360	96	Apr-Jul	1292	1607	912
	1190	99	Apr-Jun	1098	1396	773
						1525
						1419
						1197
Okanogan River						
nr. Tonasket	1740	100	Apr-Sep	1822	1046	1738
	1590	101	Apr-Jul	1740	957	1578
	1360	103	Apr-Jun	1513	804	1318
<u>Methow River System**</u>						
Methow River						
nr. Pateros	1160	110	Apr-Sep	1256	661	1054
	1080	110	Apr-Jul	1198	610	981
	930	112	Apr-Jun	1034	515	834
<u>Chelan River System</u>						
Chelan River						
at Chelan <u>4/</u>	1370	108	Apr-Sep	1225	1366	987
	1230	110	Apr-Jul	1071	1231	874
	980	113	Apr-Jun	800	966	686
						1266
						1119
						870

* Forecasts made by Morland W. Nelson and J. Alden Wilson, Soil Conservation Service, Boise, Idaho.

** These forecasts are based in part upon base flow data especially prepared and furnished for this purpose by the U. S. Geological Survey.

2/ Observed flow corrected for storage in Coeur d'Alene Lake and diversions by Spokane Valley Farms Company and Rathdrum Prairie Canals.

4/ Observed flow corrected for storage in Lake Chelan.

Streamflow Forecasts - April 1969 (Cont.)

Basin, Stream and Station	Forecast Runoff 1969	Seasonal Streamflow in Thousands of Acre-Feet					
		% 15-Yr. Avg.	Fore- cast Period	Measured Runoff			15-Yr. Avg. 1953-67
				1968	1967	1966	
<u>Chelan River System (Cont.)</u>							
Stehekin River							
at Stehekin	950	105	Apr-Sep		1004	74	904
	820	106	Apr-Jul		868	637	772
	650	111	Apr-Jun		674	493	586
<u>Wenatchee River System</u>							
Wenatchee River							
at Plain	1400	105	Apr-Sep		1324	1091	1333
	1280	106	Apr-Jul		1213	999	1204
	1040	109	Apr-Jun		955	816	952
Wenatchee River							
at Peshastin	1920	106	Apr-Sep	1530	1797	1493	1814
	1770	107	Apr-Jul	1349	1662	1379	1651
	1450	110	Apr-Jun	1078	1326	1131	1316
Stemilt Basin							
nr. Wenatchee	130*		May-Sep		146*	132*	--
<u>Yakima River System</u>							
Yakima River							
nr. Martin <u>5/</u>	155	107	Apr-Sep	97	115	129	145
	145	108	Apr-Jul	79	113	125	134
	125	108	Apr-Jun	73	102	113	116
Yakima River							
at Cle Elum <u>6/</u>	970	100	Apr-Sep		868	855	968
	900	102	Apr-Jul		801	789	885
	790	104	Apr-Jun		695	702	762
Yakima River							
nr. Parker <u>7/</u>	1770	100	Apr-Sep		1543	1418	1772
	1770	101	Apr-Jul		1584	1434	1752
	1640	102	Apr-Jun		1480	1336	1608
Kachess River							
nr. Easton <u>8/</u>	132	103	Apr-Sep	74	100	109	128
	128	105	Apr-Jul	65	98	107	122
	114	107	Apr-Jun	61	90	99	107

* Thousands of Miners' Inches.

5/ Observed flow corrected for storage in Lake Keechelus.

6/ Observed flow corrected for storage in Keechelus, Kachess and Cle Elum Lakes and diversion by Kittitas Canal.

7/ Observed flow corrected for storage in Keechelus, Kachess, Cle Elum, Bumping and Rimrock Lakes and diversions by Roza, Union Gap, New Reservation, Old Reservation and Sunnyside Canals.

8/ Observed flow corrected for storage in Lake Kachess.

Streamflow Forecasts - April 1969 (Cont.)

Basin, Stream and Station	Forecast Runoff 1969	Seasonal Streamflow in Thousands of Acre-Feet					
		%	Fore-				15-Yr.
		15-Yr. Avg.	cast Period	Measured 1968	Runoff 1967	1966	Avg. 1953-67
<u>Yakima River System (Cont.)</u>							
Cle Elum River							
nr. Roslyn <u>9/</u>	485	100	Apr-Sep	358	431	413	485
	450	101	Apr-Jul	310	405	391	445
	390	105	Apr-Jun	263	347	338	373
Bumping River							
nr. Nile <u>10/</u>	145	97	Apr-Sep	106	145	126	150
	135	98	Apr-Jul	93	136	117	138
	114	100	Apr-Jun	83	114	103	114
American River							
nr. Nile	125	97	Apr-Sep		128	113	129
	119	99	Apr-Jul		119	106	120
	100	101	Apr-Jun		100	90	99
Tieton River							
at Tieton Dam <u>11/</u>	245	98	Apr-Sep	176	241	197	251
	214	100	Apr-Jul	140	210	177	215
	172	100	Apr-Jun	113	169	148	172
Naches River							
nr. Naches <u>12/</u>	870	97	Apr-Sep		876	769	899
	800	98	Apr-Jul		810	707	819
	700	100	Apr-Jun		694	621	698
Ahtanum Creeks							
nr. Tampico <u>13/</u>	59	120	Apr-Sep		56	39	49
	54	120	Apr-Jul		52	36	45
	49	122	Apr-Jun		45	32	40
<u>Lower Columbia River System</u>							
Mill Creek							
nr. Walla Walla	35	121	Apr-Sep		23	23	29
	30	120	Apr-Jul		20	20	25
	28	122	Apr-Jun		18	18	23
Lewis River							
at Ariel <u>14/</u>	1530	113	Apr-Sep		1107	1371	1358
	1370	114	Apr-Jul		994	1234	1197
	1210	114	Apr-Jun		889	1081	1059
Cowlitz River							
at Castle Rock <u>15/</u>	2740	97	Apr-Sep		2521	2691	2813
	2430	98	Apr-Jul		2258	2420	2481
	2080	98	Apr-Jun		1934	2056	2119

9/ Observed flow corrected for storage in Lake Cle Elum.

10/ Observed flow corrected for storage in Bumping Lake.

11/ Observed flow corrected for storage in Rimrock Lake.

12/ Observed flow corrected for storage in Bumping and Rimrock Lakes and diversions by Tieton, Selah Valley, Wapatox Canals and City of Yakima.

13/ Observed flow of North and South Forks (combined).

14/ Observed flow corrected for storage in Lake Merwin, Yale and Swift Reservoirs.

15/ Observed flow corrected for storage in Mayfield Reservoir.

Streamflow Forecasts - April 1969 (Cont.)

Basin, Stream and Station	Forecast Runoff 1969	Seasonal Streamflow in Thousands of Acre-Feet				
		% 15-Yr. Avg.	Fore- cast Period	Measured Runoff		
				1968	1967	1966
						15-Yr. Avg. 1953-67

OLYMPIC PENINSULA

Dungeness River System

Dungeness River

nr. Sequim	168	98	Apr-Sep	204	173	172
	140	99	Apr-Jul	169	142	141
	107	102	Apr-Jun	124	105	105

COMPARISON OF SNOW COVER WITH THAT OF PREVIOUS YEARS

The following tabulation of Washington stream basins presents the water content of the snow about April 1, 1969, as per cent of the same data in 1968 and 1967 and average of record.

Tributary Basin	No. of Courses Average	Years of Record	1969 1968	Snow Water Expressed as per cent of 1967	1953-67 Avg.
-----------------	------------------------------	-----------------------	--------------	--	--------------

UPPER COLUMBIA BASIN

Pend Oreille	6 - 10	5 - 32	139	112	117
Kettle	10 - 13	6 - 31	192	125	162
Colville	4 - 5	10	523	212	145
Spokane	11	5 - 32	160	105	113
Sanpoil	1	30	155	126	146
Okanogan	26 - 28	4 - 34	116	88	108
Methow	6	8 - 27	150	108	131
Chelan	3 - 4	8 - 37	119	96	112
Entiat	8	2 - 4	163	111	--
Wenatchee	8 - 10	8 - 37	266	173	138
Yakima	13 - 14	3 - 49	323	169	132
Ahtanum	1 - 2	20	129	87	190

LOWER COLUMBIA

Mill Creek	1 - 3	38	973	188	169
White Salmon	2	25	198	106	111
Lewis	14 - 17	8 - 25	412	147	129
Cowlitz	9 - 10	6 - 29	229	111	112

PUGET SOUND

Nisqually	3 - 4	4 - 19	208	87	108
White	2 - 4	13 - 29	149	94	112
Green	6 - 8	8 - 23	550	310	110
Cedar	3 - 7	7 - 8	2889	194	161
Snoqualmie	2	11 - 23	319	114	122
Skykomish	1 - 3	11 - 23	315	114	142
Skagit	12 - 13	18 - 37	527	104	112

OLYMPIC PENINSULA

Skokomish	4 - 5	5 - 19	128	92	110
Elwha	1	19	171	94	112
Dungeness	1	19	149	89	106

RESERVOIR STORAGE - 1000 Acre Feet

BASIN or STREAM	RESERVOIR	USABLE ^{1/} CAPACITY	1969	Measured (April) 1968	1967	Normal*
<u>COLUMBIA</u>						
Spokane	Coeur d'Alene Lake	225.1	227.5	156.5	158.7	164.0
Columbia	Franklin D. Roosevelt Lake	5232.0	***	585.2	1957.1	2359.6
Columbia	Banks Lake	761.8	693.5	682.9	661.5	499.3
Okanogan	Conconully Reservoir	13.0	5.2	7.2	3.9	6.7
Okanogan	Salmon Lake	10.5	6.3	8.9	3.3	8.5
Chelan	Lake Chelan	676.1	88.2	437.3	90.7	169.0
<u>YAKIMA</u>						
Yakima	Keechelus Lake	157.8	102.2	146.4	126.9	102.8
Kachess	Kachess Lake	239.0	181.5	225.1	204.0	184.4
Cle Elum	Lake Cle Elum	436.9	271.3	390.2	291.0	278.8
Bumping	Bumping Lake	33.7	3.3	16.6	3.8	14.0
Tieton	Rimrock Lake	198.0	158.2	186.1	125.6	135.3
<u>PUGET SOUND</u>						
Skagit	Ross Reservoir	1202.9	480.3	1154.5	866.1	715.2
Skagit	Diablo Reservoir	90.6	88.3	85.4	83.7	85.5
Skagit	Gorge Reservoir	9.8	8.1	7.9	8.2	--

^{1/} Based on Active Storage

* 15-year average 1953-67

*** Reservoir drawn down to below usable capacity

SOIL MOISTURE - APRIL

Drainage and Station	Number	Elev.	Profile Depth	(Inches) :	Soil Moisture Content		
				Total Capacity :	(Inches)	as of Apr 1.	
					1969	1968	1967
<u>CRAB CREEK</u>							
Creston-Kunz	18B1m	2440	48	13.6	7.9	7.1	10.2
Jack Woods	18B3m	2600	48	13.6	9.8	9.4	9.7
Krause	18B4m	2440	48	13.6	8.4	8.7	9.2
Sheffels	18B5m	2360	48	13.6	7.0	6.6	8.1
Sherman	18B7m	2440	48	13.6	6.7	7.8	10.2
Wheatridge	18B6m	2200	48	13.6	9.5	9.2	9.2
<u>OKANOGAN</u>							
Salmon Meadows	19A2M	4500	48	5.4	3.2	3.6	3.7
Trout Creek	3-M	3600	48	7.3	Late Report	4.6	4.0
<u>YAKIMA</u>							
Domery Flat	21B20m	2200	48	6.9	Late Report	4.9	5.7
Lake Cle Elum	21B14M	2200	48	12.8	Late Report	9.0	9.2
<u>WALLA WALLA</u>							
Couse	17C3m	3650	48	11.1	10.9	6.8	10.2
Helmerts	17C2M	4400	48	12.0	11.5	11.7	11.0
<u>WENATCHEE</u>							
Upper Wheeler	20B7M	4400	48	12.7	10.7	12.0	12.2

FALL SOIL MOISTURE

Drainage Basin and Station	Number	Elev.	Profile Depth	(Inches) :	Soil Moisture Content		
				Total Capacity :	(Inches)	as of Oct.1	
					1968	1967	1966
<u>CRAB CREEK</u>							
Creston-Kunz	18B1m	2440	48	13.6	5.0	4.6	5.0
Jack Woods	18B3m	2600	48	13.6	7.1	5.2	4.3
Krause	18B4m	2440	48	13.6	5.2	4.9	5.1
Sheffels	18B5m	2360	48	13.6	4.9	3.7	3.8
Sherman	18B7m	2440	48	13.6	3.9	3.6	3.7
Wheatridge	18B6m	2200	48	13.6	4.6	4.0	4.1
<u>OKANOGAN</u>							
Salmon Meadows	19A2M	4500	48	5.4	2.7	1.5	3.0
Trout Creek	3-M	3600	48	7.3	4.1	4.0	3.8
<u>YAKIMA</u>							
Domery Flat	21B20m	2200	48	6.9	3.1	4.8	2.4
Lake Cle Elum	21B14M	2200	48	12.8	5.2	9.1	6.4
<u>WALLA WALLA</u>							
Couse	17C3m	3650	48	11.1	7.4	5.4	5.7
Helmerts	17C2M	4400	48	12.0	7.6	6.7	6.7
<u>WENATCHEE</u>							
Upper Wheeler	20B7M	4400	48	12.7	5.5	5.6	5.7

PRECIPITATION ^{1/}

Division Averages and Departures

DRAINAGE DIVISIONS	FALL Sept - Oct. 1968 ^{2/}		WINTER Nov. 1968 - Mar. 1969 ^{2/}	
	Observed	Departure	Observed	Departure
Columbia in Canada	4.82	+0.93	11.49	-1.20
Pend Oreille - Spokane	7.55	+3.67	20.07	+1.82
Northeastern Washington	3.86	+1.49	12.35	+1.26
Southeastern Washington	5.18	+2.53	14.33	+1.92
Central Washington	4.78	+0.34	29.88	+2.75
North Central Washington	1.05	-0.36	7.90	+1.56
Northwest Slope Cascades	13.60	+1.93	47.27	-4.87
Southwest Slope Cascades	10.97	+3.25	38.79	-2.08

Northeastern Washington	- Lower Spokane, Colville, Sanpoil and lower Kettle drainages.
Southeastern Washington	- Touchet, Tucannon and Palouse drainages.
Central Washington	- Yakima, Wenatchee and Chelan drainages.
North Central Washington	- Methow and Okanogan drainages.
Northwest Slope Cascades	- Puget Sound drainages.
Southwest Slope Cascades	- Lower Columbia drainages.

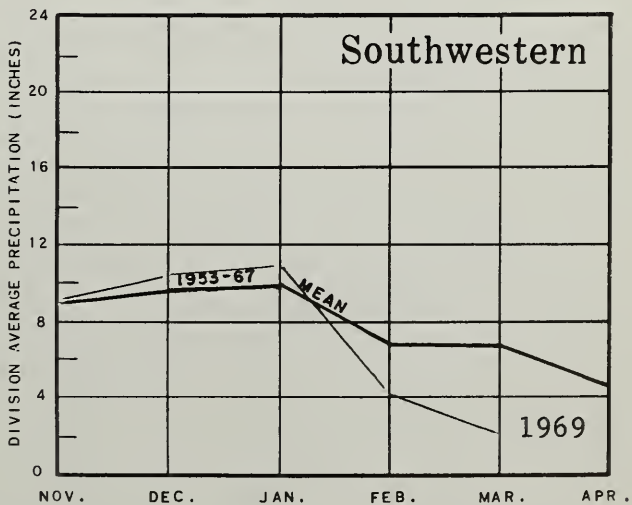
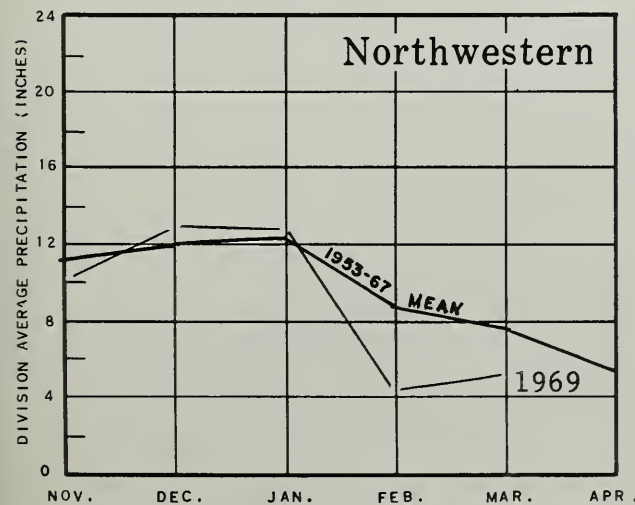
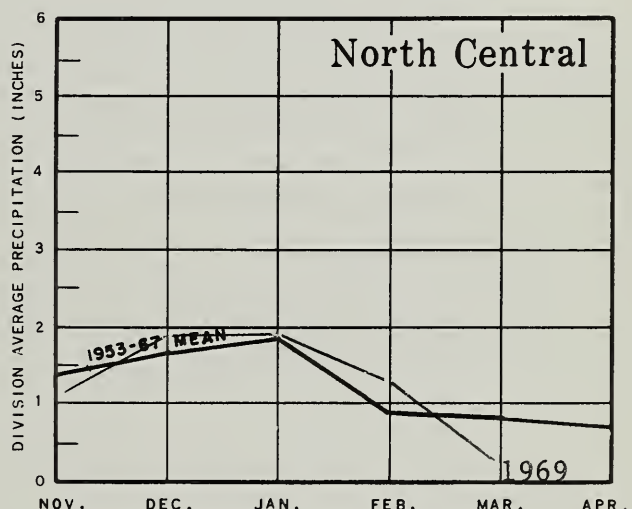
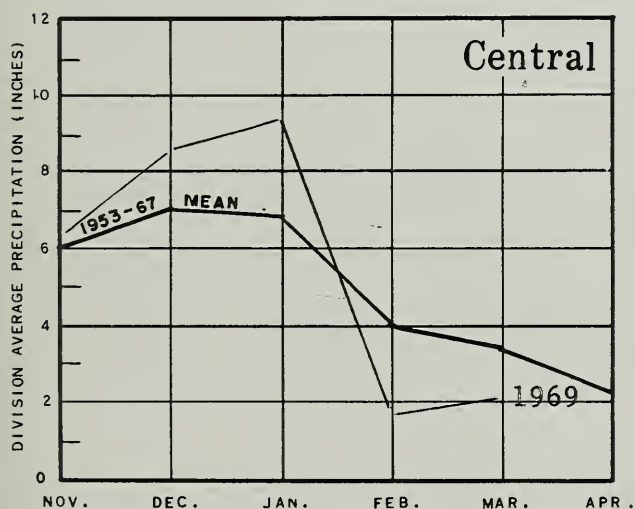
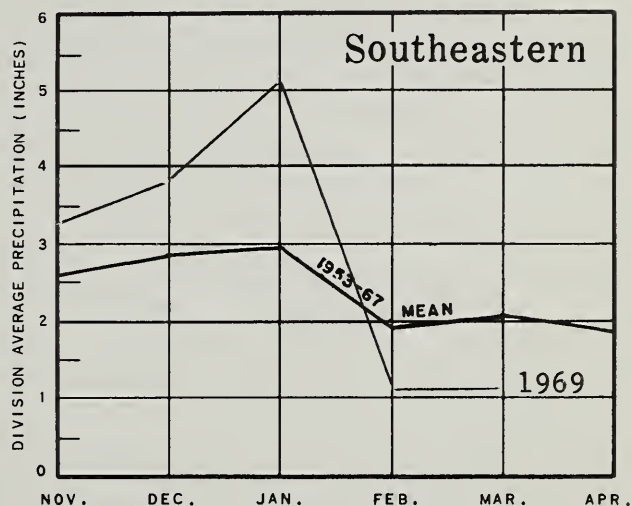
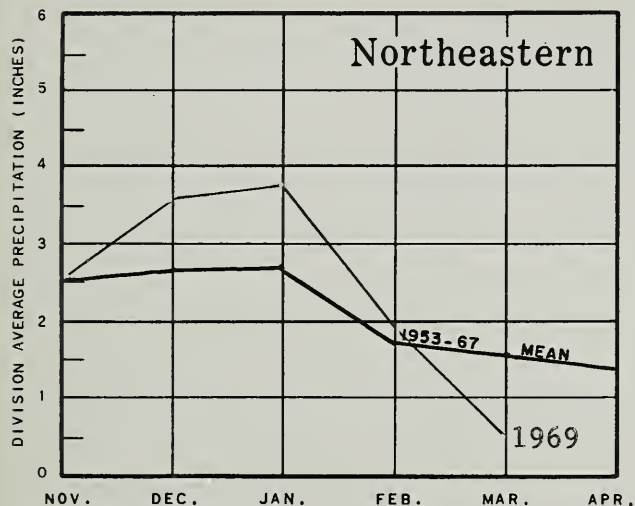
^{1/} - Preliminary analysis by U. S. Weather Bureau from data furnished by Meteorological Services of Canada and U. S. Weather Bureau.

^{2/} - Departure from 15-year (1953-67) drainage division average.

WASHINGTON VALLEY PRECIPITATION

1968-1969

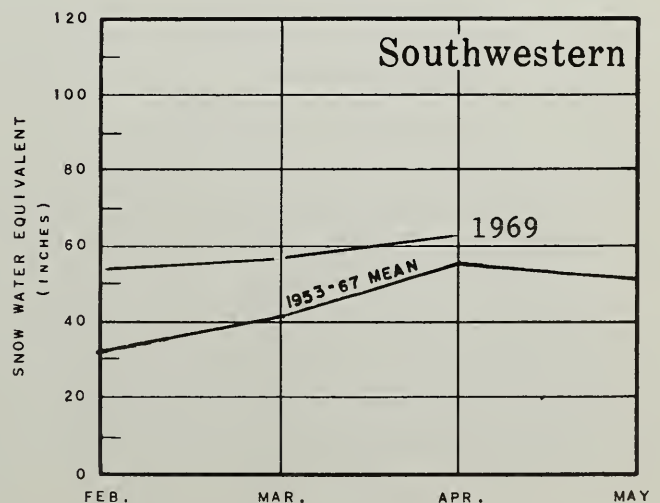
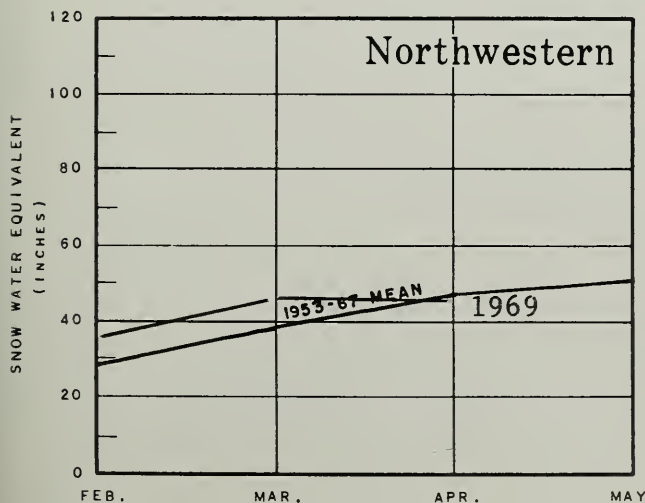
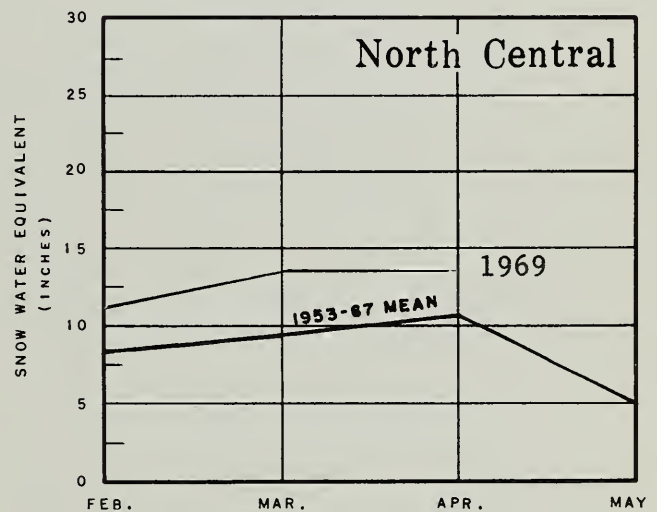
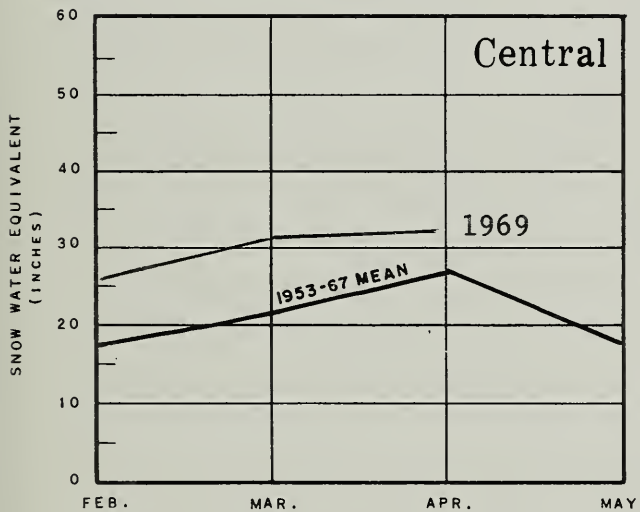
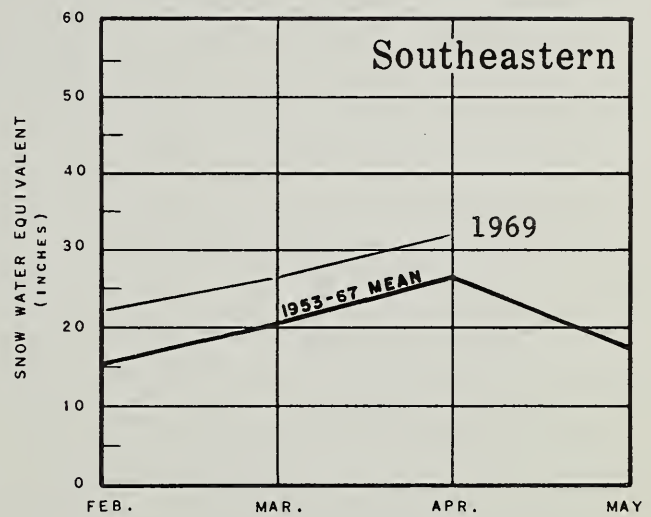
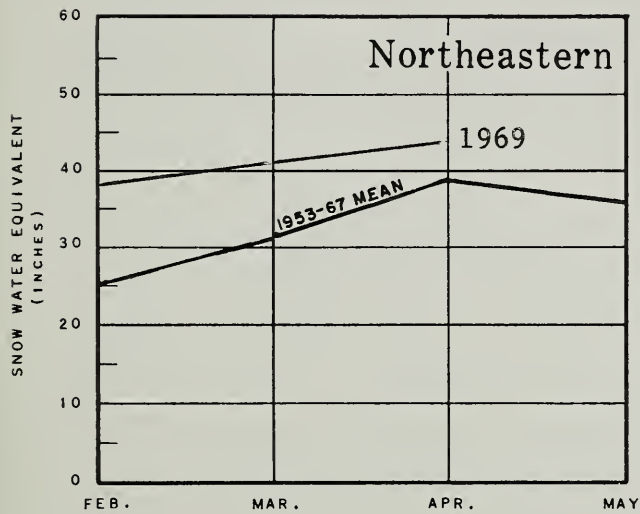
DRAINAGE AREAS



WASHINGTON SNOW COVER

1969

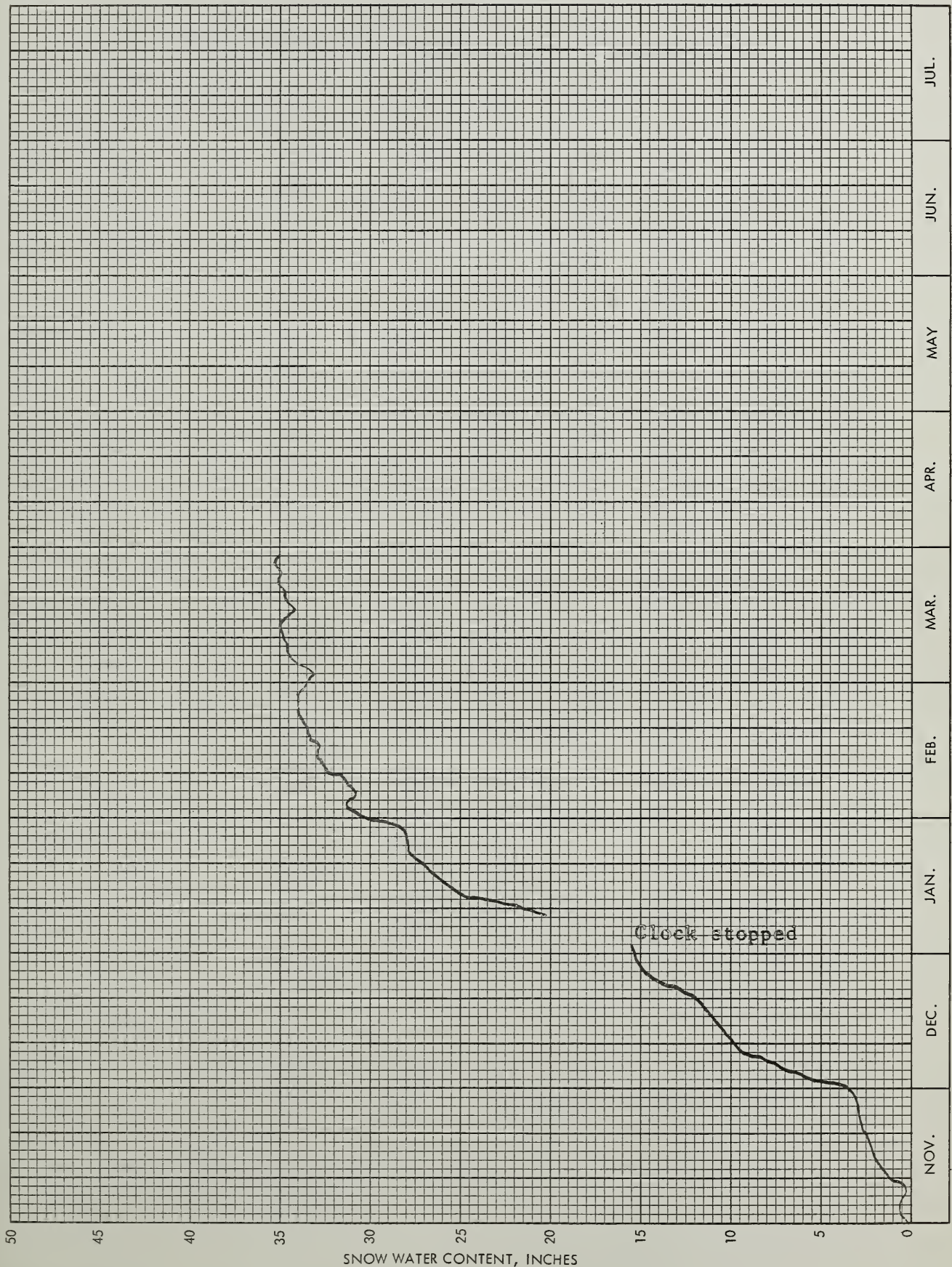
DRAINAGE AREAS



SNOW PILLOW DATA

Berne-Mill Creek

Sec. 13 T. 26N R. 14E No. 21B41SP Drainage: Wenatchee
 Lat. 47° 46' Long. 121° 01' Elev. 3170



APPENDIX 1
SNOW DATA MARCH 1 to APRIL 1, 1969

SNOW			1969			PAST RECORD		
DRAINAGE BASIN and SNOW COURSE			Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
Name	No.	Elev.				1968	1967	1953-67 Avg.

U P P E R C O L U M B I A D R A I N A G E

PEND OREILLE RIVER

Baree Creek	15B11	5500	3/31	111	49.5	40.7	56.6	--
Baree Midway	15B16	4600	3/31	97	41.2	27.7	39.0	--
Benton Meadow	16A2	2344	3/31	16	7.2	0.3	1.6	3.2
Benton Spring	16A3	4900	3/28	60	23.0	13.3	23.0	20.8
Boyer Mountain	17A2	5250	3/28	81	31.3	23.2	23.9	27.9
Brush Creek	14A4	5000	4/3	38	13.9	8.5	14.4	13.1
Bunchgrass Meadow	17A1	5000	3/28	87	36.3	26.3	41.1	31.8
#Chewelah	17A4	4925	3/29	60	22.0	15.9	16.2	19.2*
Hoodo Creek	15C1	6200	3/27	126	52.4	41.3	53.4	50.6
Lookout	15B2	5250	3/29	107	44.7	28.8	40.8	38.4
Mosquito Ridge	16A4A	5100	3/27	103	44.8	31.8	--	40.2*
Nelson	Canada	3050	3/28	51	20.3	14.0	18.2	17.4
Schweitzer Bowl	16A6	4500	3/26	91	36.3	27.7	39.3	--
Schweitzer Ridge	16A5	6100	3/26	152	61.2	41.0	57.7	--
Smith Creek	16A1	4800	4/1	118	51.8	43.8	49.3	50.1
Winchester Creek	17A3	2970	3/28	42	16.0	10.7	8.7	11.3*

KETTLE RIVER

Barnes Creek	Canada	5500	3/27	57	19.7	23.2	25.4	21.8**
Big White Mountain	Canada	5500	3/31	55	21.2	18.7	24.7	--
Boulder Road	18A2	1450	3/24	23	9.0	0.0	0.0	1.8*
Butte Creek	18A3	4070	3/24	43	14.4	8.1	10.6	9.9*
Cabin Creek	18A8	3170	3/24	41	14.3	7.5	8.0	8.9*
Carmi	Canada	4100	3/28	27	8.1	4.1	8.5	5.5**
Farron	Canada	4000	3/28	49	19.6	12.1	15.6	14.4
Goat Creek	18A4	3595	3/24	29	10.8	0.0	6.1	6.5*
Lower Trapping Cr.	Canada	3050	3/31	13	4.2	0.0	4.6	--
#Monashee Pass	Canada	4500	3/27	41	12.9	15.9	17.0	14.4
Old Glory Mountain	Canada	7000	3/30	82	32.1	--	34.8	27.1**
Snow Caps Creek	18A5	2150	3/24	20	7.8	0.0	0.0	1.9*
Snow Caps Trail	18A6	2720	3/24	26	10.5	1.8	4.1	5.7
Summit G. S.	18A7	4600	3/24	40	13.3	7.2	9.3	9.6*
Upper Trapping Cr.	Canada	5500	3/31	31	10.1	7.0	11.0	--

COLVILLE RIVER

Baird	17A6	3215	4/2	18	6.6	0.4	3.4	6.4*
Carlson	18A9	2885	3/30	16	5.6	0.0	0.0	2.7*
Chewelah	17A4	4925	3/29	60	22.0	15.9	16.2	19.2*

Not located directly on this drainage

* Adjusted 1953-67 average

** Average for years of record

APPENDIX 2

SNOW

DRAINAGE BASIN and SNOW COURSE			1969			PAST RECORD		
			Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
Name	No.	Elev.				1968	1967	1953-67 Avg.

COLVILLE RIVER (Cont.)

Stranger Mountain	17A5	4990	3/29	53	20.2	13.2	10.7	14.3*
Togo	18A10	3370	3/30	48	17.7	11.8	5.4	11.2*

SPOKANE RIVER

Above Burke	15B7	4100	3/27	73	30.8	14.6	28.5	25.0*
Above Roland	15B7	4350	3/27	87	39.0	18.8	41.1	34.8*
Below Roland	15B6	3770	3/27	49	22.3	--	18.9	17.0*
Copper Ridge	16B2	4800	Late Report			16.0	33.6	31.1
Forty-nine Meadows	15B3	5000	3/27	87	35.7	25.4	34.2	36.1
Fourth of July Summit	16B3	3100	3/14	53	17.6	0.0	7.8	--
			3/28	41	15.8	0.0	8.2	11.2*
Granite Peak	15B13A	6000	3/27	123	49.0	45.2	52.4	51.2*
Kellogg Peak	16B5A	5560	3/27	95	39.6	22.7	36.1	33.5*
#Lookout	15B2	5250	3/29	107	44.7	28.8	40.8	38.4
Lost Lake	15B14A	6000	3/27	156	62.1	51.8	67.4	66.2*
Lower Sands Creek	16B1	3400	Late Report			10.8	17.4	21.0
Medicine Ridge	15B4A	6150	3/27	120	47.8	46.6	57.2	--
#Mosquito Ridge	16A4A	5110	3/27	103	44.8	31.8	--	40.2*
Outlaw Creek	15B12A	3750	3/27	59	23.5	10.8	15.0	17.8*
Roland Summit	15B5A	5200	3/27	102	43.9	24.3	47.1	41.2*
Sherwin	16C1	3200	Late Report			3.7	13.0	16.6*
Sunset	15B9A	5600	3/27	106	42.9	27.4	43.5	35.6*

SANPOIL RIVER

Sherman Creek Pass	18A1	5350	3/25	62	22.2	14.3	17.6	15.2
--------------------	------	------	------	----	------	------	------	------

OKANOGAN RIVER

Aberdeen Lake	Canada	4300	3/25	23	7.2	4.8	5.4	6.1
Blackwall Mountain	Canada	6250	3/28	78	32.0	39.1	44.0	33.5**
Bouleau Creek	Canada	5000	3/29	39	12.7	11.7	12.1	11.8**
Brookmere	Canada	3200	3/30	30	6.5	9.1	11.6	9.3
Carrs Landing #1	Canada	2250	3/29	0	0.0	0.0	0.0	--
Carrs Landing #2	Canada	3200	3/29	17	5.2	0.0	0.0	--
Clark +	19A8a	7000	4/3	56	23.0	20.2	23.1	23.1*
Copper Mountain	Canada	4300	3/29	15	4.3	0.0	5.3	5.4**
Enderby	Canada	6250	3/27	109	43.9	43.3	46.7	37.5**
#Freezeout Meadows	20A2	5000	3/27	68	26.4	27.0	34.7	32.6
Hamilton Hill	Canada	4900	3/30	42	14.5	13.3	18.7	14.8**

Not located directly on this drainage

* Adjusted 1953-67 average

** Average for years of record

APPENDIX 3

SNOW

DRAINAGE BASIN and SNOW COURSE			1969			PAST RECORD		
			Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
Name	No.	Elev.				1968	1967	1953-67 Avg.

OKANOGAN RIVER (Cont.)

#Harts Pass	20A5A	6500	3/28	109	45.6	48.8	53.3	46.6
#Horseshoe Basin +	19A5a	7000	4/3	60	25.2	20.8	21.0	13.5*
Isintok Lake	Canada	5510	3/30	24	5.9	6.6	10.3	--
Lost Horse Mountain	Canada	6300	4/1	28	7.7	--	--	7.5**
#Loup Loup	19A7	4650	3/27	39	14.7	8.2	9.4	8.7*
McCulloch	Canada	4200	3/27	29	8.2	5.0	8.2	6.5
Missezula Mountain	Canada	5100	3/23	29	8.1	9.0	11.4	7.2**
Mission Creek	Canada	6000	3/29	61	22.5	20.3	24.2	20.1
Monashee Pass	Canada	4500	3/27	41	12.9	15.9	17.0	14.4
Mount Kobau	Canada	5950	3/30	44	14.7	11.8	15.2	--
Muckamuck +	19A9a	6390	4/3	60	24.6	18.0	20.6	17.5*
Mutton Creek No. 1	19A1	5700	3/28	45	17.9	12.5	22.3	14.1
Mutton Creek No. 2	19A4	6000	3/28	44	17.7	13.7	21.1	15.1
New Copper Mountain	Canada	4300	3/29	16	4.1	0.0	5.8	4.2**
New Penticton Res.	Canada	6200	4/1	32	8.4	7.4	11.2	--
Nickel Plate Mtn.	Canada	6200	3/31	25	7.7	6.8	11.0	7.8
Paysayten +	20A28a	4300	4/3	39	16.4	15.6	21.0	14.9*
Postill Lake	Canada	4500	3/31	30	8.6	8.4	9.2	8.8**
#Quartette Lake	Canada	4000	3/29	41	14.4	11.4	14.1	14.2
Rusty Creek	19A3	4000	3/28	29	10.4	4.8	7.6	7.0
Salmon Meadows	19A2	4500	3/28	41	13.7	9.8	13.2	10.6
Silver Star Mountain	Canada	6050	3/28	85	35.5	32.8	36.9	25.6**
Starvation Mountain +	19A10a	6750	4/3	66	27.1	21.6	24.2	22.7*
Summerland Reservoir	Canada	4200	3/29	24	8.4	8.7	12.0	8.7
Touts Coulee	19A6	2845	Not Measured			--	--	0.7*
Trout Creek	Canada	4700	3/29	25	5.6	5.3	8.7	6.9
White Rocks Mountain	Canada	6000	3/31	58	21.3	24.4	30.0	20.2**

METHOW RIVER

Billy Goat Pass +	20A10a	6409	4/3	97	40.7	39.6	41.3	34.4*
Dollar Watch +	20A29a	7000	4/3	72	30.2	34.8	32.2	27.6*
Harts Pass	20A5A	6500	3/28	109	45.6	48.8	53.3	46.6
Horseshoe Basin +	19A5a	7000	4/3	60	25.2	20.8	21.0	13.5
Loup Loup	19A7	4650	3/27	39	14.7	8.2	9.4	8.7*
#Mutton Creek No. 1	19A1	5700	3/28	45	17.9	12.5	22.3	14.1
#Mutton Creek No. 2	19A4	6000	3/28	44	17.7	13.7	21.1	15.1
#Rusty Creek	19A3	4000	3/28	29	10.4	4.8	7.6	7.0
#Salmon Meadows	19A2	4500	3/28	41	13.7	9.8	13.2	10.6
#War Creek Pass +	20A31a	6500	4/3	116	48.7	51.6	49.4	--

Not located directly on this drainage

+ Snow water equivalent estimated from aerial stadia observations

* Adjusted 1953-67 average

** Average for years of record

APPENDIX 4

SNOW

DRAINAGE BASIN and SNOW COURSE			1969			PAST RECORD		
			Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
Name	No.	Elev.				1968	1967	1953-67 Avg.

CHELAN LAKE BASIN

Lyman Lake	20A23A	5900	3/26	164	70.8	57.4	72.2	58.5
Park Creek Ridge	20A12A	4600	3/20	126	52.2	40.8	54.0	46.5
Rainy Pass	20A9	4780	3/28	104	42.6	41.0	50.1	41.2
Safety Harbor	20A30A	6300	3/26	91	35.0	29.2	33.5	--
War Creek Pass +	20A31a	6500	4/3	116	48.7	51.6	49.4	--

ENTIAT RIVER

Brief	20B19	1600	3/24	24	9.7	0.0	0.0	2.5*
Entiat Meadows +	20A33a	4800	3/26	113	47.8	41.3	51.0	--
Entiat River Trail +	20A34a	3150	3/26	58	24.5	11.0	24.0	--
Fox Camp +	20A36a	6510	3/26	152	64.3	59.5	62.0	--
Pope Ridge	20B20	4300	3/11	70	25.8	11.3	15.7	--
			3/25	58	24.6	10.5	17.7	--
Pugh Ridge +	20A32a	6400	3/26	101	42.7	32.9	44.0	--
Shady Pass	20A37	5000	Not Measured			29.9	--	--
Snow Brushy +	20A35a	3850	3/26	111	47.0	35.4	48.0	--
Tommy Creek +	20B21a	5300	3/26	70	29.6	21.7	33.0	--
Pope Ridge S. F.	20B24SP	4300	3/25	--	24.0	7.6	--	--

WENATCHEE RIVER

Berne-Mill Creek	21B23	2925	3/14	94	38.3	15.1	--	--
			3/28	85	36.3	15.5	28.3	27.5*
Berne-Mill Creek New	21B41SP	3240	3/28	78	37.4	12.4	--	--
Blewett Pass No. 2	20B2	4270	3/27	50	21.7	6.3	12.8	16.1
Chiwaukum G. S.	20B16	1810	3/14	47	17.6	8.8	--	--
			3/28	35	14.4	6.6	5.3	9.6*
#Fish Lake	21B4	3371	3/27	90	43.0	22.0	33.0	35.4
Lake Wenatchee	20B5	1970	3/14	53	19.8	--	--	--
			3/28	40	17.4	5.6	8.6	11.1*
Leavenworth R. S.	20B17	1127	4/1	6	2.3	0.0	0.0	--
#Lyman Lake	20A23A	5900	3/26	164	70.8	57.4	72.2	58.5
Merritt	20B18	2140	3/14	65	25.6	9.6	--	--
			3/28	53	24.2	6.8	8.6	14.2*
Stevens Pass	21B1	4070	3/14	139	58.3	22.1	50.8	49.7
			3/28	133	60.9	23.0	58.8	54.1
Stevens Pass Sand Sh	21B45	3700	3/14	107	43.3	14.1	--	--
			3/28	98	44.4	14.0	--	--

SQUILCHUCK CREEK

Beehive Springs	20B3	4400	4/1	33	14.1	2.8	3.0	7.7*
Stemilt Slide	20B6	5000	3/28	43	17.7	11.8	11.3	13.3*

+ Snow water equivalent estimated from aerial stadia observations

* Adjusted 1953-67 average

Not located directly on this drainage

APPENDIX 5

SNOW

DRAINAGE BASIN and SNOW COURSE			1969			PAST RECORD		
			Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
Name	No.	Elev.				1968	1967	1953-67 Avg.

STEMILT CREEK

Jump-Off	20B8	4450	3/28	30	12.8	3.0	3.2	7.3*
Stemilt Slide	20B6	5000	3/28	43	17.7	11.8	11.3	13.3*
Upper Wheeler	20B7	4400	3/28	33	15.4	2.7	2.1	8.3*

COLOCKUM CREEK

Colockum Creek	20B22	5300	4/1	44	19.0	12.2	--	--
Colockum Creek No. 2	20B23	4300	4/1	31	12.2	6.0	--	--

YAKIMA RIVER

#Ahtanum R. S.	21C11	3100	3/26	31	13.0	0.0	0.0	4.9*
Big Boulder Creek	21B9	3200	3/27	59	25.3	1.9	12.1	18.7
#Blewett Pass No. 2	20B2	4270	3/27	50	21.7	6.3	12.8	16.1
Bumping Lake	21C8	3450	3/14	58	20.4	8.5	13.4	16.9*
			3/31	42	18.2	6.8	13.2	16.8
Bumping Lake New	21C36	3400	3/14	65	23.6	12.1	--	--
			3/31	50	22.1	10.7	--	--
#Cayuse Pass	21C6	5300	3/27	205	91.2	64.9	100.8	91.2
Colockum Pass	20B9	5370	3/10	60	20.5	13.0	11.8	14.9*
			4/2	44	17.8	16.9	16.2	18.6*
Cooke Creek	20B10	4123	4/2	0	0.0	0.0	0.0	5.5*
#Corral Pass	21C13	6000	3/27	114	48.5	26.9	47.6	41.7*
Fish Lake	21B4	3371	3/27	90	43.0	22.0	33.0	35.4
Green Lake	21C10	6000	3/26	88	37.7	29.3	43.5	33.2*
Grouse Camp	20B11	5385	4/2	51	21.2	11.8	13.7	18.2*
High Creek	20B12	2930	4/2	0	0.0	0.0	0.0	0.9*
Joe Lake +	21B46a	4624	3/25	183	84.2	New Aerial Marker		
Lake Cle Elum	21B14M	2200	3/17	39	16.4	--	0.0	--
			3/30	25	11.6	0.0	0.0	5.7
Lemah Creek +	21B47a	3327	3/25	108	49.7	New Aerial Marker		
Manashtash	20C1	3935	3/10	32	9.4	2.4	0.0	4.0*
			4/3	13	4.6	0.0	0.0	1.8*
Morse Lake	21C17	5400	3/27	145	67.8	53.4	76.0	62.0*
Nanum	21B39	2340	4/2	30	11.4	0.0	0.0	8.0*
#Olallie Meadows	21B2	3625	3/30	115	52.2	19.0	50.8	51.3*
#Satus Pass	20D1	4030	3/27	41	18.0	0.0	2.7	--
#Stampede Pass	21B10	3000	3/13	180	57.8	13.8	46.0	45.2
			3/31	118	51.2	21.5	52.2	48.8
Trail Creek	20B14	3360	4/2	0	0.0	0.0	--	--
Tunnel Avenue	21B8	2450	3/17	77	31.0	8.2	14.5	--
			3/28	67	32.2	7.4	17.3	25.9
Walters Flat	20B15	3360	3/28	76	30.4	0.0	0.0	4.9*

* Adjusted 1953-67 average

Not located directly on this drainage

+ Snow water equivalent estimated from aerial stadia observation

APPENDIX 6

SNOW

DRAINAGE BASIN and SNOW COURSE			1969			PAST RECORD		
			Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
Name	No.	Elev.				1968	1967	1953-67 Avg.

YAKIMA RIVER (Cont.)

White Pass (E. Side)	21C28	4500	3/13	83	30.9	9.1	23.1	24.4*
			3/28	76	30.4	9.1	24.6	26.6*
White Pass (Leech L.)	21C27	4500	3/13	97	38.0	12.1	32.4	31.4*
			4/2	85	38.8	12.0	34.8	32.6*

AHTANUM CREEK

Ahtanum R. S.	21C11	3100	3/26	31	13.0	0.0	0.0	4.9*
#Green Lake	21C10	6000	3/26	88	37.7	29.3	43.5	33.2*

LOWER COLUMBIA DRAINAGEASOTIN CREEK

Spruce Springs	17C4	5700	3/26	76	31.6	17.0	22.1	--
----------------	------	------	------	----	------	------	------	----

MILL CREEK

Homestead	17C1	4030	3/27	44	17.6	0.0	7.1	7.9*
Martin Springs	17C2	4400	3/27	56	23.2	0.0	12.6	14.5*
Tollgate	18D3M	5070	3/27	78	32.1	3.3	24.2	25.9
Walla Walla Div.	18D13	2400	4/1	0	0.0	0.0	0.0	--

KLICKITAT RIVER

Satus Pass	20D1	4030	3/27	41	18.0	0.0	2.7	--
------------	------	------	------	----	------	-----	-----	----

WHITE SALMON RIVER

Cultus Creek	21C12	4000	3/27	132	55.6	29.9	51.6	49.7
#Surprise Lakes	21C13A	4250	3/27	136	60.7	29.0	58.3	54.8

WIND RIVER

Old Man Pass	21D19	3100	3/27	80	35.2	6.1	18.7	20.7*
--------------	-------	------	------	----	------	-----	------	-------

LEWIS RIVER

Blue Lake +	21C22a	4800	3/27	204	89.8	62.3	89.3	84.2*
Bob's Trail	21C21	2200	3/28	61	26.6	1.4	18.0	13.8*
Calamity Ridge +	22D1a	2500	3/27	52	24.4	0.0	4.0	--
Council Pass +	21C18a	4200	3/27	102	44.9	21.7	47.1	42.6*

Not located directly on this drainage

* Adjusted 1953-67 average

APPENDIX 7

SNOW

DRAINAGE BASIN and SNOW COURSE			1969			PAST RECORD		
			Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
Name	No.	Elev.				1968	1967	1953-67 Avg.

LEWIS RIVER (Cont.)

#Cultus Creek	21C12	4000	3/27	132	55.6	29.9	51.6	49.7
Divide Meadow +	21C29a	5600	3/27	126	56.7	43.5	61.9	60.0*
Grand Meadow	21C25	3500	3/27	75	32.6	11.2	29.6	29.0*
Lone Pine Shelter	21C26	3800	3/28	113	47.4	33.5	49.6	43.2*
Marble Mountain +	22C5a	3200	3/27	115	56.3	6.4	41.4	--
#Mosquito Meadows	21C19	4100	3/28	113	47.4	37.9	50.0	47.4*
New Muddy River	22C6	1400	3/28	47	23.3	0.0	0.0	--
Old Man Pass	21D19	3100	3/27	80	35.2	6.1	18.7	20.7*
Plains of Abraham +	22C1a	4400	3/27	198	87.1	50.8	78.7	70.2*
Smith Creek Road	22C4	2100	3/28	69	32.4	5.1	18.8	17.2*
Spencer Meadow +	21C20a	3400	3/27	80	36.8	0.0	32.8	25.6*
Surprise Lakes	21C13A	4250	3/27	136	60.7	29.0	58.3	54.8
Table Mountain +	21C24a	4200	3/27	116	51.0	28.7	53.8	49.2*
Timbered Peak +	21D18a	3000	3/27	78	36.7	0.0	29.1	23.7*

COWLITZ RIVER

Cayuse Pass	21C6	5300	3/27	205	91.2	64.9	100.8	91.2
Mosquito Meadows	21C19	4100	3/28	113	47.4	37.9	50.0	47.4*
Ohanapecosh	21C32	2200	4/2	42	18.4	0.0	13.6	16.4*
Packwood Lake	21C31	2870	3/29	45	19.4	0.0	14.2	13.5*
Pigtail Peak	21C33	5900	3/13	161	81.0	41.9	--	--
			4/2	152	68.7	44.7	70.2	72.9*
#Plains of Abraham +	22C1a	4400	3/27	198	87.1	50.8	78.7	70.2*
Potato Hill	21C14	4500	3/28	94	41.1	20.0	32.4	33.0*
#White Pass (E. Side)	21C28	4500	3/13	83	30.9	9.1	23.1	24.4*
			3/28	76	30.4	9.1	24.6	26.6*
#White Pass (L. Lake)	21C27	4500	3/13	97	38.0	12.1	32.4	31.4*
			4/2	85	38.8	12.0	34.8	32.6*
Willame Creek	21C30	3250	3/27	75	32.6	7.9	38.0	35.0*

PUGET SOUND DRAINAGE

Ghost Forest	21C4	4550	4/1	111	49.5	16.7	56.2	50.1
Longmire	21C3	2760	4/1	29	13.6	0.0	14.2	10.6
New Paradise Park	21C35	5500	4/1	141 ^{1/}	64.6	40.6	83.2	--
Stem Glade	21C1	5050	4/1	164	71.3	42.4	82.4	74.4

Not located directly on this drainage

+ Snow water equivalent estimated from aerial stadia observation

* Adjusted 1953-67 average

^{1/} Distrubed sample

APPENDIX 8

SNOW

DRAINAGE BASIN and SNOW COURSE			1969			PAST RECORD		
			Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
Name	No.	Elev.				1968	1967	1953-67 Avg.

WHITE RIVER

#Cayuse Pass	21C6	5300	3/27	205	91.2	64.9	100.8	91.2
Corral Pass	21C13	6000	3/27	114	48.5	26.9	47.6	41.7*
#Morse Lake	21C17	5400	3/27	145	67.8	53.4	76.0	62.0*
White River Campgr	21C34	4000	3/13	83	31.0	--	33.1	--

GREEN RIVER

Airstrip	21B24	1800	3/29	10	4.9	0.0	0.0	--
Charley Creek	21B25	1200	3/29	0	0.0	0.0	0.0	--
Cougar Mountain S.P.	21B42SP	3200	3/30	60	28.0	--	2.2	--
Grass Mt. No. 1	21B26	4000	3/27	73	31.5	5.7	26.5	27.6*
Grass Mt. No. 2	21B27	2900	3/29	75	33.4	2.5	22.5	26.1*
Grass Mt. No. 3	21B28	2100	3/29	24	11.3	0.0	2.2	--
Lester Creek	21B29	3100	3/27	84	35.0	12.8	25.4	28.7*
Sawmill Ridge	21B29	4700	3/27	97	43.3	17.2	46.8	46.0*
Snowshoe Butte S.P.	21B43SP	5000	3/30	155	67.3	31.5	--	--
Stampede Pass	21B10	3000	3/13	180	57.8	13.8	46.0	45.2
			3/31	118	51.2	21.5	52.2	48.8
Twin Camp	21B30	4100	3/27	66	30.6	3.1	30.2	31.0*

CEDAR RIVER

City Cabin	21B3	2390	3/31	61	29.6	0.0	15.6	18.3*
Mt. Gardner	21B21	3300	3/31	57	28.8	0.0	--	19.8*
Mt. Lindsay	21B16	2500	3/31	68	29.2	0.0	16.3	17.7*
Mt. Washington	21B15	3000	3/27	48	22.6	0.8	7.7	8.9*
Rex River	21B17	2400	3/31	35	18.8	0.0	14.7	19.8*
S. F. Cedar	21B6	3000	3/31	69	32.5	1.1	20.4	24.8
Tinkham Creek	21B20	3400	3/31	88	40.4	1.4	18.7	23.2*

SNOQUALMIE RIVER

Alpine Meadow	21B48	3500	3/29	141	64.9	New Course		
#Lake Elizabeth	21B19	2900	3/29	138	66.8	18.4	53.3	46.9*
Olallie Meadows	21B2	3625	3/30	115	52.2	19.0	50.8	51.3*
S. F. Tolt	21B18	1900	3/27	13	6.3	0.0	0.0	--

SKYKOMISH RIVER

Lake Elizabeth	21B19	2900	3/29	138	66.8	18.4	53.3	46.9
#Stevens Pass	21B1	4070	3/14	139	58.3	22.1	50.8	--
			3/28	133	60.9	23.0	58.8	--
#Stevens Pass Sand Sh	21B45	3700	3/14	107	43.3	14.1	--	--
			3/28	98	44.4	14.0	--	--

Not located directly on this drainage

* Adjusted 1953-67 average

APPENDIX 9

SNOW

DRAINAGE BASIN and SNOW COURSE			1969			PAST RECORD		
			Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
Name	No.	Elev.				1968	1967	1953-67 Avg.

SKAGIT RIVER

Beaver Creek Trail	21A4	2200	3/27	53	22.1	10.8	16.7	13.6
Beaver Pass	21A1	3680	3/27	98	41.3	29.1	40.3	35.6
Devils Park	20A4	5900	3/28	105	43.8	46.1	55.9	46.0
Freezeout Cr. Trail	20A1	3500	3/27	37	14.2	8.0	15.2	13.4
Freezeout Meadows	20A2	5000	3/27	68	26.4	27.0	34.7	32.6
#Harts Pass	20A5A	6500	3/28	109	45.6	48.8	53.3	46.6
Klesilkwa	Canada	3700	3/28	38	15.3	3.5	18.8	13.6
Lake Hozomeen	21A2	2600	3/27	36	12.5	6.9	7.8	10.4
#Lyman Lake +	20A23A	5900	3/26	164	70.8	57.4	72.2	58.5
Meadow Cabins	20A8	1900	3/28	24	9.8	0.2	6.3	7.5
New Tashme	Canada	2500	4/2	31	12.1	1.3	11.1	9.8
Quartette Lake	Canada	4000	3/29	41	14.4	11.4	14.1	14.2
#Rainy Pass	20A9	4780	3/28	104	42.6	41.0	50.1	41.2
Thunder Basin	20A7	4200	3/28	70	25.6	14.6	25.6	25.8

BAKER RIVER

Dock Butte +	21A11A	3800	3/13	174	73.1	--	83.3	--
			3/29	169	74.8	53.2	87.8	81.0*
Easy Pass	21A7A	5200	3/13	158	66.4	--	88.3	--
			3/29	182	86.3	78.7	104.3	96.7*
Jasper Pass	21A6A	5400	3/13	212	89.0	--	106.5	--
			3/28	208	91.8	92.0	116.2	103.6*
Komo Kulshan	21A17	800	3/29	36	15.8	0.0	2.6	--
Marten Lake	21A9A	3600	3/13	173	72.7	--	94.8	--
			3/29	185	78.0	59.2	97.2	88.2*
Mount Blum +	21A18a	5800	3/13	124	52.1	--	81.8	--
#Panorama (New)	21A26	4300	3/14	162	68.0	New Course		
			3/25	180	75.0			
Rocky Creek	21A12A	2100	3/13	96	40.3	--	40.9	32.4*
			3/29	95	41.1	25.0	42.6	30.5*
Schreibers Meadow	21A10A	3400	3/13	156	65.5	--	61.6	63.8
			3/29	155	69.4	54.2	81.6	73.3*
S. F. Thunder Creek	21A14A	2200	3/13	44	18.5	--	3.2	--
			3/29	25	10.9	0.0	10.4	5.3*
Sulphur Creek	21A13	1600	3/29	52	23.4	5.9	15.1	13.7*
Three Mile Creek	21A8A	4500	3/29	12	5.3	0.0	0.7	--
Watson Lakes	21A8A	4500	3/13	134	64.7	--	75.7	--
			3/29	167	73.2	63.0	81.7	78.2*

NOOKSACK RIVER

Bald Mountain +	21A19a	4400	4/3	150	61.5	25.1	65.0	--
Canyon +	21A20a	5100	4/3	167	68.5	60.8	--	--
Glacier Creek	21A23	3700	4/3	87	31.0	7.5	32.0	--

Not located directly on this drainage

* Adjusted 1953-67 average

+ Snow water equivalent estimated from aerial stadia observations

APPENDIX 10

SNOW

DRAINAGE BASIN and SNOW COURSE			1969			PAST RECORD		
			Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
Name	No.	Elev.				1968	1967	1953-67 Avg.

NOOKSACK RIVER (Cont.)

Panorama (New)	21A6	4300	3/14	162	68.0	51.0	91.5	82.2*
			3/25	180	75.0	63.6	104.0	89.3*
Twin Lakes +	21A21a	5200	4/3	204	83.6	71.2	--	--

O L Y M P I C P E N I N S U L ADUNGENESS RIVER

Deer Park	23B4	5200	3/27	71	28.0	18.8	31.3	26.4*
-----------	------	------	------	----	------	------	------	-------

MORSE CREEK

Cox Valley	23B14	4500	3/30	112	49.6	35.6	--	--
Deer Park G. S.	23B13	4850	3/27	51	19.9	7.3	18.8	--

ELWHA RIVER

Hurricane	23B3	4500	3/29	85	32.8	19.2	35.0	29.3
-----------	------	------	------	----	------	------	------	------

SKOKOMISH RIVER

Black & White	23B7	4200	3/27	133	53.2	43.2	61.8	47.9
Black & White Lakes	23B6	4700	3/27	152	70.9	57.1	86.5	67.3
Four Streams	23B10	3000	3/27	112	49.9	34.4	45.0	--
Home Sweet Home	23B5	5200	3/27	188	82.8	74.8	102.0	81.9
Sundown Pass	23B8	3900	3/27	185	83.2	60.6	81.4	66.5*

+ Snow water equivalent estimated from aerial stadia observation

* Adjusted 1953-67 average

Agencies Assisting with Snow Surveys

GOVERNMENT AGENCIES

Canada:

Department of Lands, Forests and Water Resources,
Water Resources Service, British Columbia

States:

Washington State Department of Water Resources
Washington State Department of Natural Resources

Federal:

Department of the Army
Corps of Engineers
U. S. Department of Agriculture
Forest Service
U. S. Department of Commerce
Weather Bureau
U. S. Department of the Interior
Bonneville Power Administration
Bureau of Reclamation
Geological Survey
National Park Service

PUBLIC AND PRIVATE UTILITIES

Chelan County P.U.D.
Pacific Power and Light Company
Puget Sound Power and Light Company
Washington Water Power Company

OTHER PUBLIC AGENCIES

Okanogan Irrigation District
Wenatchee Heights Irrigation District

MUNICIPALITIES

City of Walla Walla
City of Tacoma
City of Seattle

Other organizations and individuals furnish valuable information for snow survey reports. Their cooperation is gratefully acknowledged.

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ROOM 360, U. S. COURT HOUSE
SPOKANE . WASHINGTON 99201

OFFICIAL BUSINESS

POSTAGE AND FEES PAID
U. S. DEPARTMENT OF AGRICULTURE

FIRST CLASS MAIL

FEDERAL - STATE - PRIVATE
COOPERATIVE SNOW SURVEYS

Furnishes the basic data
necessary for forecasting
water supply for irrigation,
domestic and municipal water
supply, hydro-electric power
generation , navigation ,
mining and industry

*"The Conservation of Water begins
with the Snow Survey"*